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JUN 28 1937

Engineering NEWS-RECORD

June 24, 1937

Labor Worries Construction

Along a 2000-mile trail, an editor finds disorganized employer groups uncertain as to course of action to meet rapid spread of unionism, inevitable shortage of skilled mechanics, strikes and jurisdictional disputes

Fast Subaqueous Tunnel Driving

Shield for first tube of Lincoln Tunnel pushed through mud and rock in record time

By-Pass and Access Roads

A Discussion by A. W. Dean

A Record Rigid-Frame Bridge

By J. A. Dunford

High Steel Bridge Erected by Inexperienced Men

Book Reviews *Current Unit Prices*

Report of the A. W. W. A. Convention

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As to Public Construction

A READER WRITES in to express his misgiving over the attitude of this page toward public construction. He says that it seems to be "too much in favor of more profit for more contractors at more government expense." Lest this view be shared by others it may be worth while to set forth as concisely as possible just what that attitude actually is.

This page is deeply concerned for the well-being of the construction industry as a whole. But that industry comprises many more than the contractors. It includes the consulting architects and civil engineers of the nation with all their staffs; it includes the architects and engineers permanently employed by many industrial firms and utilities as well as by governmental units. It includes also thousands of mechanical and electrical engineers whose employment is directly contingent on construction activity.

It includes the manufacturers of materials, machinery and tools that are used in construction together with all their employees, both in their factories and in their sales staffs. It includes those who produce the raw materials that are used in those factories and those who transport both raw materials and finished products. It includes many others, such as those engaged in the writing of insurance and in the jobbing, retailing and other activities incident to distribution. All these and their dependents must be added to the contractors and their employees who, in the eyes of so many, compose all that there is to the construction industry.

NORMALLY the construction activities of the nation thus provide employment for a very substantial share of those gainfully employed in thousands of communities.

To hold their places in this army of workers, many have devoted years to acquiring professional educations or practice in the skilled crafts. Others have assembled and trained specialized organizations and have invested millions of capital in plant and equipment. Although the field operations of construction are carried on by units generally smaller than the imposing plants and organizations of other industries, the industry as a whole, taking into account the value of all the materials and services involved, ranks among the two or three largest. Normally it accounts in one week for a greater volume of work than is done by some industries in the course of a year.

In ordinary times public works constitute about one-third of the total construction activity on which this large share of our people must depend for their employment. In a business depression private construction falls off badly, and thus increases the relative importance of the public demand for construction services. It becomes highly desirable, therefore, to maintain public construction at least at normal volume and, if possible, to expand it in some degree; otherwise a very basic segment of the national economy is doomed to collapse, with evil effect on the current situation and irreparable injury to an industry that is so vital to the national welfare and progress.

THAT, all too briefly, is the reason why this page has stood consistently for an expanded program of public works construction during the depression period. And that is why, even during the current period of recovery, it questions efforts which, in the name of public economy, attack sound investment in useful public facilities while they countenance administrative and political extravagances. True economy will take account of values created as well as expenditures made; and public construction programs, formulated on that basis, are just as necessary and just as sound today as they ever have been.

So much for the matter of public construction in itself. Next week this page will consider our reader's reference to the contractor and his relation to public construction.

Willard Chevalier

· ENGINEERING NEWS-RECORD ·

Published every Thursday. Vol. 118, No. 25. Price 25c per copy. Subscription, domestic, Canada, Mexico, Central and South American countries, $5 per year. All other countries, $9 a year or 36 shillings. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the act of March 3, 1879. Printed in U. S. A. Cable address "McGrawhill New York." Member A.B.P. Member A.B.C.

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Editorial and Executive Offices: 330 West 42d St., New York. Publication Office: 99-129 N. Broadway, Albany, N. Y. Branch Offices: 520 N. Michigan Ave., Chicago; 883 Mission St., San Francisco; Aldwych House, London, W. C. 2, England; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Atlanta, Ga.

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WATER WORKS ENGINEERS APPRECIATE THE MIRROR-LIKE SURFACE BARRETT WATER WORKS ENAMELS PROVIDE

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The Barrett Company maintains a Pipe Line Service Department to assist engineers in all coating problems, and also has available Field Service men whose assistance is offered where Barrett's protective coatings are used. Inquiries are invited.

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F. E. SCHMITT, *Editor* WILLARD CHEVALIER, *Vice-President*

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VOL. 118 *JUNE 24, 1937* NO. 25

THIS WEEK AND NEXT

IS heavy construction to be the next field of activity of organized labor, and if so what may the construction industry expect with respect to ability to carry forward its contracts? In an effort to answer these questions Engineering News-Record sent an editor on a wide tour to interview contractors, engineers and labor leaders in many centers of construction activity. The first report is in this issue.

Rigid frames of record span are features of the Schmitz Park concrete bridge described this week. Details of this job show advances in design and construction on structures of this type.

Bypass roads have not completely solved the problem created by attempts to carry dense traffic on old highway routes through congested centers. In this issue, A. W. Dean, an authority on highway planning, discusses some of the problems of bypasses and access roads.

Experts in many phases of water supply addressed the 1,200 delegates at the annual meeting of the American Waterworks Association in Buffalo on June 2–10. Attention was focused on softening practices and intestinal disease epidemics.

Speed in shield tunneling is largely controlled by the iron-setting operations. Mason & Hanger Co. did a fast driving job on Lincoln tunnel with the aid of an ingenious mechanical bolt tightener and by smart handling of the iron segments. How they did it is told on page 955.

Workability is recognized as a paramount quality of good concrete, but it is hard to define and harder still to specify quantitatively. In next week's issue Edw. W. Scripture, gives his answers to the many questions on this subject. His article contains a great deal of meat for the practical man.

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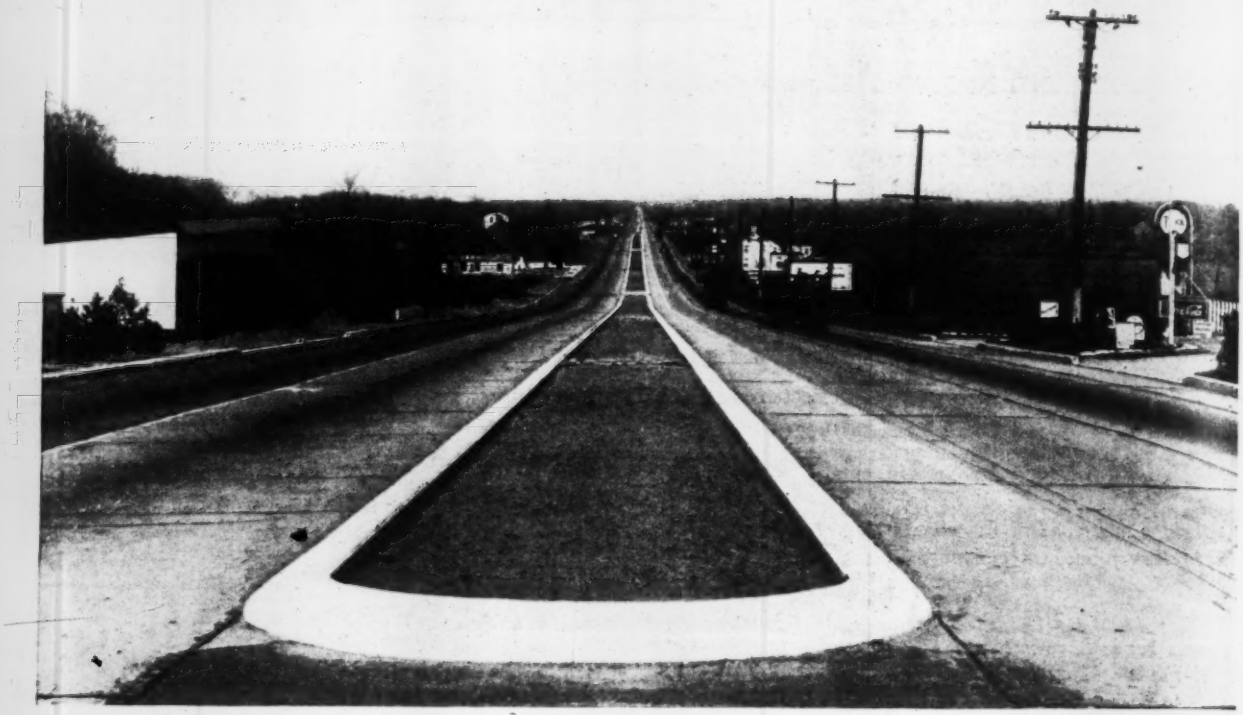
First Cost is Last Cost



Curbing made of Atlas White portland cement on Brunswick Pike, New Brunswick, N. J.
Constructed by New Jersey State Highway Department

This curbing will stay white permanently. It requires no maintenance, no repairs, no replacement

● This is a safe, well-engineered highway. Traffic flows on either side of the center island with no possible danger of head-on collisions.

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ATLAS WHITE PORTLAND CEMENT FOR MARKERS AND CURBS

THE WEEK'S EVENTS

Pennsylvania Appoints New Road Head

S. W. Marshall becomes chief of Pennsylvania Highways and Erie district is reorganized

Samuel W. Marshall, has been appointed chief engineer of the Pennsylvania State Highway Department, to succeed H. H. Temple, who was recently dismissed after an investigation of gravel contracts in the Erie district. (*ENR* June 10, 1937 p. 854). Mr. Marshall resigned from the newly created Pennsylvania Turnpike Commission (*ENR* June 17, 1937, p. 892) to which he had been appointed by the Governor a week previously.

Mr. Marshall's position on the Turnpike Commission is to be filled by Edward N. Jones, who has just resigned as head of the Works Progress Administration in Pennsylvania. The new WPA administrator will be J. Banks Hudson.

District Reorganization

Secretary of Highways Warren Van Dyke has announced a number of changes in the operating personnel of the Erie District. William M. Sullivan and Howard S. Fassett have been appointed junior construction inspectors, as have Thaddeus J. Feeney, Ralph H. Morris and William J. Hurley. Raymond K. Martin has been appointed senior draftsman and Burdette K. Beebe has been transferred to assistant construction engineer. M. M. Frey has been transferred to office engineer, William G. Updegrove to plans engineer, Harry W. Claybaugh to right of way supervisor, and Francis J. McDonald to project engineer.

The department, acting on orders from Governor Earle, has rejected bids on gravel submitted for the Pioneer Materials Company of Kittanning by P. G. Baldwin, receiver for the company. The firm was forbidden to bid on state projects after the recent revelations concerning graft in gravel contracts, but since then the Federal Court in Pittsburgh appointed Mr. Baldwin receiver for the firm, and it was thought that the firm could participate on this basis in future bidding. It was not stated whether the ban on the Pioneer company would be permanent.

Local Relief Contributions Thrown Out by Senate

The Senate June 22 passed the $1,500,000,000 Relief Appropriation Bill for the fiscal year beginning next month substantially as it passed the House on June 1. The bill goes to conference to reconcile minor differences.

As in the House, consideration of the bill was marked by determined efforts to reassert congressional authority over the allocation of relief expenditures. Proposed amendments included a reduction in the appropriation to $1,250,000,000 to be alloted to the states for expenditure (by Senator Vandenberg), earmarking of $20,000,000 for a census of unemployment (by Senator Lodge), and a requirement that local sponsors of work-relief projects put up 40 per cent (Senator Byrnes) or 25 per cent (Senator Robinson) of the cost. All were defeated.

As approved by the Senate, the bill contains amendments extending the life of the Public Works Administration for two years, applying to relief wages any geographical wage differential that may be approved by Congress, limiting administration cost to 5 per cent, and requiring the publication of names of those paid more than $1,000 per year.

The PWA extension has already been approved by the House of Representatives in a separate bill.

• • •

Foundation Contract Let For Whitestone Bridge

The Triborough Bridge Authority has awarded the contract for construction of the tower piers and foundation for anchorages and approach-piers for the Bronx-Whitestone bridge to the Frederick Snare Corp. of New York City on its low bid of $1,894,000.

The Whitestone bridge, for which financing was provided when the New York legislature recently (*ENR*, Feb. 11, 1937, p. 241) authorized an increase in the bonded indebtedness of the Triborough Bridge Authority, will be a suspension bridge across the East River, five miles upstream from the present Triborough bridge. The main bridge will consist of a central span of 2,300 ft. and side spans of 735 ft. It will carry a four lane roadway.

Canadian Engineers At Semi-Centennial

Engineering Institute honors many engineers at meeting marking 50 years of activity

The first half century of life of the Engineering Institute of Canada was marked by special meetings held last week in Montreal and Ottawa at which honors were conferred upon prominent engineers from several countries and at which the Institute received formal greetings from most of the principal engineering societies throughout the world. More than 700 members and guests were in attendance, including distinguished engineers from Great Britain, the Dominions and the United States, making the meeting the most important engineering gathering ever held in Canada.

The general meetings, an account of which is to be published next week, were preceded on Monday by a plenary council meeting and a conference of delegates from the 25 branches of the Institute at which a most useful discussion of society affairs occurred. The general meetings were held in Montreal on the three following days, and on Friday a large delegation went to Ottawa.

President G. J. Desbarats, of Ottawa, opened the general meetings in Montreal on Tuesday. The opening session was devoted to the reception of greetings and delegates from other engineering and learned bodies, the conferement of honorary memberships on distinguished engineers, and the presentation of Institute medals and awards. The first word of Mr. Desbarats conveyed to the assembled gathering the tragic news of the death in Montreal, but four hours previous, of Harrison P. Eddy, past president of the American Society of Civil Engineers, official delegate of that close sister society, and a man well known and well beloved of Canadian engineers. (For an account of Mr. Eddy's death see *ENR* June 17, p. 895.)

Greetings to the Institute were presented by almost fifty other societies and universities, in most cases by official delegates. Sir Alexander Gibb, President of the Institution of Civil Engineers

(*Continued on page* 933)

Pennsylvania Sets Up Housing Bodies

Pennsylvania sets up local authorities with power of eminent domain

Local housing authorities may be established for every city of over 30,000 population and for every county in the state of Pennsylvania under the terms of a law passed by the state legislature and recently signed by Governor Earle.

The bill provides that whenever the governing body of a city or county shall decide there is need for a housing authority or whenever the governor of the state, upon receipt of a petition from 25 citizens of the state or county, shall himself make such decision, the governor will issue a certificate of necessity and the local governing body will appoint a housing authority consisting of five members.

The act provides that an authority shall "constitute a public body corporate and politic exercising public power which will include all powers necessary or appropriate to carry out and effectuate the purposes and provisions of this act." Specifically enumerated are the powers of eminent domain, which the authority may exercise in the same manner as a city or county, and the power to issue revenue bonds. Such revenue bonds may, at the option of the authority, be secured by the revenues from a particular housing project, from a group of enumerated housing projects, or from the total revenues of the authority.

The authorities are intended to provide housing on a non-profit basis for persons of low income. In general, tenants of public housing projects must have incomes not exceeding six times the rental charged for their dwelling. Rentals are to be set on such a basis as to produce revenues which, together with all other available income of the authority, will pay off the obligations of the authority.

• • •

New McGraw-Hill President

James H. McGraw Jr., chairman of the board of the McGraw-Hill Publishing Co., on June 21 was elected president of the company to succeed Malcolm Muir, resigned to become president of Weekly Publications Inc., publishers of *News-Week*. Mr. McGraw has been in the service of the company since his graduation from Princeton in 1915, first on the staff of individual papers and since 1925 as an executive, becoming executive vice president in 1932, and chairman of the board in 1935 when his father, founder of the company, became honorary chairman.

DAYLIGHT UNDER THE EARTH

THE WALDO tunnel, northern approach to the Golden Gate Bridge, is lighted by 15 sodium luminaires. The tunnel is a part of the California state highway system and was built by the California division of highways.

First Money Is Received For Bayonne Terminal

In spite of the existence of a number of pending suits seeking to halt the Bayonne ship rail terminal project, Bayonne, N. J., the PWA has advanced $1,000,000 to the city to start work on the project, purchasing general obligation bonds of the city. The $4,250,000 New York Bay port terminal development is to be financed by a 33 1/3 per cent grant and a 66 2/3 per cent loan from PWA.

A court action is now pending before the U. S. District Court of the District of Columbia in which three Bayonne taxpayers are seeking an injunction to prevent PWA from releasing funds for the property on the ground that the terminal plan is a private undertaking. Several other suits involving the city's financing operations in connection with the project are also pending.

PWA allotted $5,252,000 for the project in September, 1935, but the city was unable to meet all the terms of the allotment and the loan and grant was temporarily suspended. When it was reinstated, the sum was reduced to the present figure.

Recently the state supreme court issued an injunction against the project on the grounds that it granted a monopoly to the Central Railroad of New Jersey, but when the contract between the city and the railroad was changed, the court withdrew its objection.

The construction contract for the project has been awarded to Standard Dredging Co. and J. Rich Steers jointly for $3,280,000.

• • •

Blandford Is Manager Of TVA

Centralization of executive power in the Tennessee Valley Authority is now a fact with the appointment of John B. Blandford, Jr., as general manager. Mr. Blandford will carry out policies determined by the three TVA directors as a body, ending the previous system by which the various branches of activity were divided up among the three directors, each of whom was in charge of his particular field.

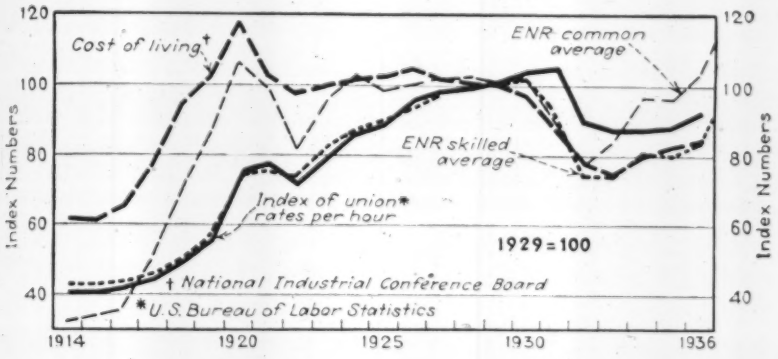
Mr. Blandford joined TVA in September, 1933, as assistant to Arthur E. Morgan, its chairman. He was subsequently given the title of Co-ordinator and has been, since May, 1936, acting general manager. He is a graduate in mechanical engineering of the Stevens Institute of Technology and also of the National Institute of Public Administration. He has served as assistant city manager of Petersburg, Va., and has done considerable research work for various governmental bodies including the cities of Newark, N. J., and Cincinnati, Ohio, where he completely reorganized the public safety department. He is a member of the ASME, City Managers Association, Governmental Research Association, and International Police Chiefs Association.

THE CURRENT TREND

This week's news of contract volume and construction cost factors

Labor Shares the Wealth

The wage rate trend in construction keeps ahead of the cost of living



Labor in the construction field must look elsewhere than at wage rates if it is seeking a cause to strike. The accompanying chart makes this plain. Furthermore, wage rate trends are keeping up with the rising cost of living, and the common labor rate, at an all-time high of 115 per cent of 1929, is considerably ahead of it. Wage rates are, of course, not bread and butter until they are multiplied by hours worked, but rising volume of construction gives this side of the picture a rosy hue also. Labor is all set to get its share of all new business. The chart is also interesting as showing that union workers do not fare better than those who belong to no organization.

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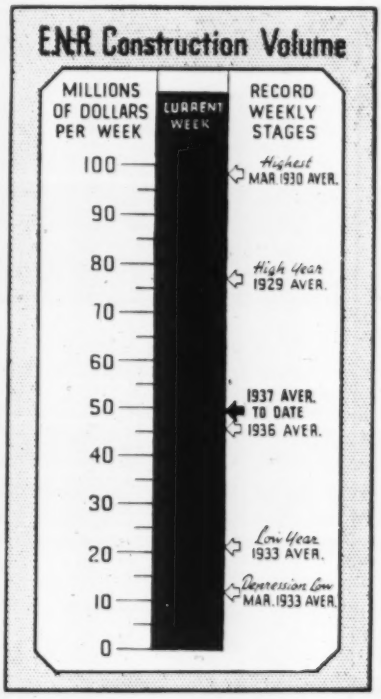
Business Briefs

The wage-and-hour bill pending in Congress is said to have a good chance of passing. Current construction wage rates of over 60c an hour for common labor are above any probable minimum to be set. Maximum hour provisions present the principal problem for the construction industry.

Concrete pavement awards for May totaled 6,639,150 sq.yd. according to the Portland Cement Association. This compares with a monthly average for the first five months of 4,017,000 sq.yd.

Imports of cement into the U. S. in April totaled 59,060,241 lb. (209,000 bbl.) as against exports of 33,706 bbl. according to the U. S. Bureau of Foreign and Domestic Commerce. The respective valuations were $126,039 for imports and $95,830 for exports.



THIS WEEK'S FIGURES

CONTRACTS

(Thousands of Dollars)

	Week Ending June 25 1936	June 17 1937	June 24 1937
Federal	$9,544	$4,049	$4,761
State&Municipal	21,777	28,533	40,854
Total public	$31,321	$32,582	$45,615
Total private	16,044	47,798	69,915
TOTALS	$47,365	$80,380	$115,530

1937 (25 weeks)	$1,245,428
1936 (26 weeks)	$1,121,375

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

(Thousands of Dollars)

	Week June 24	Cumulative
NON-FEDERAL WORK	$9,222	$598,073
State & mun. bonds	6,376	256,827
Corporate securities	1,380	268,992
PWA loans and grants	1,459	42,315
RFC loans	7	29,939
FEDERAL WORK	.....	.....
TOTAL ALL WORK	$9,222	

1937 (25 weeks)	$598,073
1936 (26 weeks)	$445,652

A six-year record in contract awards gives summer an auspicious start. The $115,530,000 total almost fills the chart which we thought was large enough to last out the year. Steel mill contracts at $55,000,000 raised industrial building awards to a 5-year top. Of the total for the week, private construction accounts for 60 and public construction for 40 per cent.

THIS WEEK'S LARGE CONTRACTS

Steel mill—Carnegie-Illinois, Braddock, Pa	$15,000,000
Steel mill equipment—Irwin Works, Carnegie-Illinois, Clairton, Pa	40,000,000
Court house—Jamaica, N. Y.	3,078,000
School of Architecture—M.I.T., Cambridge, Mass	1,100,000
Summerfield Housing Project, Minneapolis, Minn	2,225,000
Foundations—Bronx-Whitestone Bridge, New York City	1,894,000
Superstructure, Mississippi River Bridge—Baton Rouge, La	3,706,000
Sewage treatment equipment—Southwest Plant, Chicago	1,266,000
Dredged fill, etc., for East River Drive—New York City	2,421,000
Subway—Sixth Ave., Section 6, New York City	6,959,000
Highways—Kentucky $501,000 **Colorado** $524,000 **Mississippi**	1,200,000

Power Secondary Norris Says

Bill setting up regional authorities is primarily for navigation and flood control

Public hearings on the Norris bill to establish seven regional water conservation authorities covering the entire country started June 21 before a subcommittee of the Senate committee on agriculture and forestry.

Senator George W. Norris of Nebraska, sponsor of the bill, was the first witness to appear. He stated that it is modeled closely after the Tennessee Valley Authority Act, as amended, and that its primary objective is to improve navigation and control floods for the entire nation. This is a task beyond the ability of any state or group of states, and also impossible of attainment by private industry. The improvement of navigation alone, said the Senator, is sufficient grounds to uphold the constitutionality of the proposed legislation.

The Ohio valley flood of January, 1937, has demonstrated the value of comprehensive river development in controlling floods. Although far from complete, the TVA dams withheld 32,000 second-feet from the swollen crest of the Ohio, a difference which, in the Senator's opinion, would have wiped out the city of Cairo if it had not been withheld.

The development of hydro-electric power, said Senator Norris, is also an important by-product. "It would be an economic sin to carry out a vast program of navigation improvement and flood control without utilizing the power possibilities of the streams for the benefit of the public." Power production, however, should be subordinated to the paramount considerations of flood control and navigation. Many dams will be suitable for these purposes only, and will not lend themselves to power generation. Others can be built with sufficient storage capacity to permit some power development, but must be operated at less than full efficiency to keep storage available in times of flood. Private capital cannot afford to do this, but the federal government can. "Whenever a conflict occurs between the requirements of navigation and flood control on the one hand, and power production on the other, power should always be subordinated."

Aside from some slight expansion of planning activities, the only way in which the new bill departs from the TVA model is in the injunction clause. Experience with TVA and PWA has demonstrated the fact that legal obstructions can cause millions of dollars in losses from delays caused by injunctions later dismissed by the higher courts. As a defense, the bill provides that injunctions can only be issued against the proposed authorities if the complainant posts a bond sufficient to reimburse the government, and also prospective purchasers of power, for such losses.

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Action May be Taken Soon On N. Y. Building Code

The Building Committee of the New York City Board of Aldermen has finally reported out, favorably, the new city building code which has lain in committee since 1932. The Board of Aldermen can act on the bill next month, and if final action is taken and the bill is signed by the Mayor the code would go into effect at the first of the year. The code is to replace the existing code which was adopted in 1916.

The new code was started in 1928. At the request of the Mayor, the Merchants Association of New York appropriated $75,000 to pay a technical staff to draft the new code. Drafting of the code was completed in 1932 and the bill went to the Housing Committee. The committee has held many hearings since, but has not been able to reach an agreement until the present time.

An important provision of the new code would permit the use of welded building construction which is now forbidden. Buildings would be classified according to fire resistance, and several intermediate types not now provided for would be introduced.

Under the new code responsibility for conforming to the code regulations would be imposed upon those filing building plans and constructing buildings rather than upon the plan examiner and building inspector, as at present.

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Cincinnati Renews Request For PWA Grants

The city council of Cincinnati, which last April decided to seek no more PWA aid for its public works (*ENR*, April 15, 1937, p. 569), has telegraphed Washington requesting that all applications for PWA grants now on file for Cincinnati be renewed. The action was taken because it now appears that the federal relief act of 1937 now pending in the Senate will include a provision reinstating the 45 per cent PWA grant and ending the present policy of granting only 115 per cent of the amount actually spent for relief labor.

Vanderbilt Parkway Offered to Public

Vanderbilt offers his private toll road on Long Island to county highway departments

William K. Vanderbilt has offered the right of way of the Long Island Motor Parkway, a private toll speedway running for more than 50 miles through Long Island, to the highway authorities of New York City and Nassau and Suffolk counties.

The gift would be of value chiefly for the right of way, as the road surface is in bad condition and the old bridges at highway intersections are narrow and dangerous. Highway officials have announced that if the gift is accepted, the parkway would not be maintained as a unit, but would be pieced into the existing highway system wherever it fitted. Those parts of the highway which do not fit into the existing highway system would be sold and the proceeds applied on the improvement of the remaining parts. The parkway is on a 100-ft. right of way and is macadam surfaced.

The highway was built by William K. Vanderbilt in 1908 as a sporting enterprise, and for several years the Vanderbilt Cup automobile races were run over it. The roadway was built primarily to maintain the right of way for a possible railroad up Long Island and it was built to railroad grade. After the World War, the road was opened to the public as a toll road, but in recent years, with the construction of the Long Island Parkway System, the collection of tolls has fallen off and the road has not been self-supporting.

• • •

Building Lockout Ends In Columbus

Building construction in Columbus, Ohio and the immediate vicinity, which has been held up since June 11 by a lockout declared by the General Contracting Association of Columbus against the Columbus Building Trades Council, was resumed on June 17 when the contractors called off the lockout.

The contractors' action was taken in support of the F & Y Construction Co., against which a strike had been called by the trades council. The strike was seeking union recognition for the common laborers union and a minimum wage rate of 50 cents per hour.

The lockout was called off after the F & Y Co. had settled the strike by agreeing to recognize the building laborers as part of the Building Trades Council and to pay the minimum wage.

BOSTON PWA HOUSING OVERLOOKS THE HARBOR

Low cost housing project that PWA is building in South Boston is in a setting unequaled among the 50 other projects in the national program. By ingenious design on the part of its committee of 17 architects, headed by J. G. Leland, 70 per cent of the 1,016 apartments have a view of the approaches to Boston harbor.

Beyond the site in the above view is the Columbus Park playground and the municipal beach and bath houses. Old Colony Ave., a main route between Boston and Quincy, is in the foreground.

The reinforced concrete buildings with brick walls and limestone trim are founded on 3100 concrete caissons sunk 12 to 15 ft. to hard clay bearing. The mechanical, electrical and plumbing utilities are completely modern, and in all other respects the buildings are as up to date as the $6,750,000 allotment will permit. Matthew-Cummings Co., the contractor, had the project about 65 per cent complete on the first of the month.

Union Demands Presented To Detailing Offices

After an organizational campaign which, according to the union, has resulted in organizing the majority of the structural detailing offices in New York City, the Federation of Architects, Engineers, Chemists and Technicians, a C.I.O. affiliate, has presented demands to all the offices in the city, asking union recognition.

The Federation asks that it be recognized as the sole collective bargaining agency for the engineering, architectural and drafting employees of the firm and for a contract providing a 40-hour week, time and a half for overtime, and double-time for holidays and Sundays; provision for holidays and vacation; and notice before layoff. The proposed contract would provide that present rates of pay continue for a period of six weeks after which a new schedule of rates would go into effect. The Federation also asks that firms agree not to take on work from other firms when the intention of the letting out of the work is to evade fair trade and labor standards.

The salary scale proposed to the detailing offices by the Federation includes provision for an apprenticeship period of one year for college graduates and of two years for non-graduates. During this period, beginners would start in at the rate of $25 per week, with increases of $5 every six months. Minimum scales for non-apprentices are: beam and column detailer, $55 per week; all around detailer, $65; checker, $75; and squad boss, $85.

. . .

State Engineer Investigates Safety of Dam

An investigation of the Yankee Meadows Dam near the town of Parowan, Utah, to determine whether or not the dam is safe is to be made by T. H. Humphreys, Utah state engineer. The U. S. Forest Service has reported that the dam is unsafe, stating that the dam, which is of earth-fill construction, is water-soaked and contains no spillway and that, with the water rising behind it, there is considerable danger of a break. The Forest Service entered a formal protest against storage behind the dam and advised that it has closed a camp ground in Parowan Canyon below the dam.

Court Forbids Metering Huntington Parking

Installation of parking meters at Huntington, W. Va., was forbidden under a recent decision of the State Supreme Court overruling a decision of the Cabell County circuit court. The high court's ruling will prevent the city from using 550 meters purchased during the last city administration.

The court did not pass upon the legality of the parking meters as such, but based its decision on the fact that the purchase contract was signed by Mayor Chapman before an ordinance authorizing the mayor to affect the contract became effective and that the contract was therefore void.

Mayor Chapman had contracted to purchase 550 meters from the Mark Time Parking Meter Company for $31,000. A temporary injunction to enjoin the city from installing meters was obtained in the Common Pleas Court but the restraining order was later dissolved by the circuit court. A group of citizens appealed from that decision to the high court; the appeal was not opposed by the city, the present administration not being in favor of the meters.

Small Earthfill Dam Fails

Small reclamation dam in Colorado fails when fill becomes saturated

The Fruit Growers Reservoir dam, a small reclamation dam on the Gunnison River, near Austin, Colo. failed due to saturation on June 15. The wall of water moving down the narrow gorge flooded a portion of the village of Austin, damaged crops, washed away a hundred yards of the Denver & Rio Grande Western Railroad, and destroyed a portion of Colorado Highway No. 92. No lives were lost.

Although warnings had been given the day before and the inhabitation had evacuated the district, property damage amounted to $300,000. The greatest harm done appeared to be the loss of the irrigation waters stored behind the dam, destroying prospects for a bumper crop.

The dam was built by the Fruit Growers Ditch and Reservoir Co. in 1898 at a cost of $21,700. It was an earth structure 910 ft. long and 36 ft. high, storing 33,400 acre feet behind it. A spillway had been excavated around the north end of the dam, but had never been used.

A few years ago a slip occurred due to saturation, but this was corrected by installation of a drainage system. Recently another slip, also caused by saturation, covered the outlet end of the outlet and prevented the lowering of water in the lake. The slip exposed a vertical face on the dam about 9 ft. high and extending back into the crown of the dam.

M. C. Hinderlider, state engineer, immediately gave instructions to lower the water by excavating a narrow channel through the spillway, to drain the toe of slope, and to restore part of the displaced material for temporary support of the vertical exposed face.

This work had been partially completed, when the slip began to move again, causing further leakage and preventing transportation of the shovel and equipment to the north end of the dam for use in the spillway. The increased difficulty necessitated a long detour around the reservoir and before the shovel could reach the spillway the condition of the dam became serious.

The owners then cut a 4-ft. wide trench between the dam proper and the spillway where the height of the structure was only 5 ft. The flow of the water then deepened and widened the trench so rapidly that the entire 3400 acre feet discharged in nine hours.

Immediate efforts towards reconstruction of the dam are being made.

Wide World Photo

A HELPING HAND FOR THE FISH

A FISH LADDER, one of those which is intended to save the salmon industry on the Columbia River from destruction by Bonneville dam, begins directly in front of the power house in the lower right of the above picture, and continues up through the center of the photo, where it joins a ladder coming from the near end of the dam, then goes to the right and enters a lake back of the power house.

This is one of an extensive system of fish ladders and fish elevators, built in connection with the Bonneville project at a cost of over $6,000,000 to meet the demand of the fishery interests.

New York Housing Project Leased to City

The PWA, on June 16, formally turned over Harlem River Houses, its $4,219,000 low-rent housing project in Harlem, New York City, to the city of New York. The project will be operated by the New York City Housing Authority, under an arrangement by which the authority will pay an annual rent to PWA of $69,000 (*ENR*, June 3, 1937, p. 842).

A saving of $109,300 was effected, PWA has announced, when contract for construction of superstructures for Summer Field Homes, $3,500,000 project in Minneapolis, was awarded to Walter Butler Co. of St. Paul on its low bid of $2,225,000. When bids for the project were first opened last November, the low bid was $2,334,300. This was considered too high by the PWA and all bids were rejected.

The accepted bid covers construction of four more two-story row houses than was called for in the original plan.

Rentals have been announced on two housing projects in Cleveland, Cedar Central and Outhwaite. They are the eleventh and twelfth projects on the PWA housing program to approach completion. Rentals at the Outhwaite project vary from an average of $12.75 per month for a two-room apartment to $22.44 for a six-room group house. At Cedar Central the rates range from $18.44 for a three-room apartment to $22.83 for a five-room apartment. An additional utility charge will range from $5.35 monthly for a two-room unit to $8 for a six-room group house.

The bid of John Griffiths & Sons Construction Co. of Chicago for construction of Parkside project in Detroit, mentioned as having been received on page 964 of this issue, has been accepted by PWA and a contract awarded.

. . .

PWA Approves Seven Jobs On 45 Per Cent Basis

The Public Works Administration has announced approval of seven projects with a total estimated cost of $3,257,000. The allotment, covering 45% of the construction cost of the project totalled $1,466,000. No loans are included in the allotment.

Largest of the seven projects is at Tulsa, Okla., where a $1,405,000 high school will be constructed. At Chattanooga, Tenn., a hospital estimated to cost $1,091,000 will be built for Hamilton County.

Other projects include a grant of $111,000 to Fulton, Mo. for schools; $106,000 to Bristol, R. I. for a school; and $56,500 to Yankton, S. Dak. for a ward building.

Canadian Engineers

(Continued from page 927)

of London, England, the parent body of all engineering associations, led the representatives from Great Britain; he was supported by other distinguished British and American engineers, and by a representative from so far distant a part of the British Empire as Australia.

New honorary members

Honorary membership was conferred on the following in connection with the celebrations, bringing the total number of honorary members up to 17, the list being headed by the Duke of Windsor, elected when he was Prince of Wales:

Sir Alexander Gibb, president of the Institution of Civil Engineers (Great Britain), a grandson of one of the early members of the Institution, well known in Canada as the author of the Gibb Report on the national ports of Canada, made in 1932 on behalf of the Dominion Government, on the basis of which the present system of harbor administration was evolved;

Hon. C. D. Howe, Minister of Transport in the present Dominion Government, previously a consulting engineer at Port Arthur, Ont., specialising in grain Elevator work, following a period spent as professor of civil engineering at Dalhouse University, Nova Scotia. Mr. Howe is responsible for the recent re organization of several federal departments into the new Department of Transport;

Hon. Grote Stirling, Minister of National Defense in the last Canadian Government, and the first engineer to become a Canadian cabinet minister; engaged on civil engineering work in England before coming to Canada in 1911;

Prof. Robert W. Angus, professor of mechanical engineering at the University of Toronto, a past president of the Ontario Association of Professional Engineers, and well known as an expert on hydraulics;

George H. Duggan, best known through his long connection with Dominion Bridge Co. which he served for many years successively in all the senior executive posts, being now chairman of the board of directors;

Harrison P. Eddy (posthumously), past president of the American Society of Civil Engineers, well known consulting engineer of Boston, Mass., and well known in Canada in connection with his engineering advice in connection with Toronto sewage works;

S. J. Hungerford, president, Canadian National Ry., a mechanical engineer who has risen to his present eminent position from the junior ranks of railroad labor;

Jacques Rabut, distinguished French consulting engineer of Paris, and expert on reinforced concrete who is well known in Montreal, having delivered courses of lectures to the French Canadian students of l'Ecole Polytechnique.

J. G. Sullivan honored

The Sir John Kennedy medal, highest award of the Engineering Institute of Canada, founded to commemorate the name of Sir John Kennedy, the famous blind harbor engineer of Canada, this year was awarded to John G. Sullivan, and was presented to him during the semi-centennial meetings. Mr. Sullivan came to Canada from the United States in 1893, and served with the Canadian Pacific Ry. from 1900 to 1928, from 1915 to 1918 as Chief Engineer, and for the following ten years as Consulting Engineer. In recent years he has practiced privately in Winnipeg. His railway service in Canada was interrupted by two years during which he served as acting chief engineer of the Panama Canal.

Other medals awarded included the Duggan Medal to P. L. Pratley for his paper on the reconstructed Second Narrows Bridge at Vancouver.

• • •

Bridge Being Demolished Falls at Montgomery

A bridge over the West Branch of the Susquehanna River at Montgomery, Pa. collapsed June 19 as workmen were repairing damage done by the 1936 flood. Two men were killed and two others were slightly injured.

The Montgomery Bridge was a nine-span reinforced concrete arch. After the 1936 flood the bridge was closed to traffic and it was decided to replace six of the damaged spans with new construction, retaining three of the original spans. A contract was awarded for the reconstruction, and the contractor had begun to demolish the six spans which were to come out.

It was the contractor's intention to remove the concrete little by little, but his operations caused the six spans which were to be removed to collapse. The remaining three spans were not damaged by the collapse, according to E. E. Brandow, bridge engineer of the Pennsylvania Department of Highways.

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Florida Canal Bill Dead for This Year

Chairman Mansfield of the House Rivers and Harbors Committee announced on June 16 that the bill authorizing completion of the Florida canal will not be reported out this session. He said that the favorable report recently made by the committee was voted with this understanding.

WASHINGTON HIGHLIGHTS

Special reports by Paul Wooton

The Senate passed and sent to the House a resolution directing the Corps of Engineers to prepare and submit a comprehensive flood control plan covering all major rivers in the United States.

Senator Copeland of New York has introduced a bill to permit the alteration of federal flood control projects to include local water supply and similar projects, provided that the additional cost be met entirely by the local authorities.

Ratification of an interstate compact between Maine and New Hampshire providing for the creation of an interstate bridge authority is proposed in a bill introduced in Congress June 16 by Senators Fred H. Brown and Frederick Hale, who also introduced a bill authorizing the construction of a bridge across the Piscataqua River near Portsmouth.

The Nevada-California Electric Corporation on June 17 asked the U. S. District Court for the District of Columbia to enjoin PWA Administrator Harold L. Ickes from disbursing a $1,242,000 grant and $1,518,000 loan to the Imperial Irrigation District of California. The project involves the construction of a hydro-electric plant on the All-American Canal and the enlargement of a diesel generating plant at Brawley, Calif., as well as other facilities.

The Duke Power Company and the Southern Public Utilities Company on June 19 were granted a temporary injunction by the U. S. Circuit Court of Appeals at Asheville, N. C., preventing the Public Works Administration from disbursing a $2,852,000 loan and grant to Greenwood County, S. C., for the construction of the Buzzards Roost hydro-electric power project.

• • •

Road Bureau Gives Course in Soil Study

The federal Bureau of Public Roads began on June 15 the first of a scheduled series of courses for highway engineers in the public service on the study of soils. The work is being offered at the research laboratory of the Bureau at Arlington, Va. The action was taken in recognition of increasing importance of soil testing in highway construction, particularly in the construction of low-cost secondary roads.

(News continued on page 962)

COMMENT AND DISCUSSION

Readers' opinions on matters that concern the engineer

Profession in Danger

Sir: The State of Washington, up to Jan. 1, 1936, had no regulation over the engineering profession, but since the passage of the professional engineers registration act of March 22, 1935, we have had definite foundation upon which to build. Under this law come all professional engineers, except members of the American Institute of Mining and Metallurgical Engineers, those employed by the United States, and some political appointees.

Engineers in this state have seldom been recognized as professional men. To the general public they have been considered as perhaps skilled craftsmen, technicians or clerks. It is a deplorable condition, but perhaps after the registration act has been in operation a few more years, it will be better here, as elsewhere. A profession without any specified requirements as to skill, fitness, knowledge and ethics, could and did not induce any respect.

What we gained through the professional engineers registration act is now in danger of being lost. Forces are busy working to drag the profession down to the lower levels through affiliation with larger groups, where we would be only a cog in a not even smooth-running machinery; just another hand at labor, not a brain at creative work. Although it is easy to understand why this movement is gaining momentum, let us hope that it will not carry us away. It is easy to understand this unionization movement when we see that our pay envelopes are not as bulging as those of men in trades and unions. "Closed shop", "In union there is strength"; very well—in our engineering societies we will find just that strength. And we hope that in a logical and friendly way we may reach an accord with our employers without the childish threat of closing the slide rule, level and transit or jacking up the mechanical devices of our profession and just sit down!

Our employer-employee relations are too closely connected, after working at each others elbows, mostly in harmony. What would happen in the case of a union? We would probably wake up some morning and find a steamfitter, timber-cruiser, carpenter or electrician working at our jobs. A soda fountain clerk would be juggling the chemical formulas at the pulp and paper mill; a shovel operator would be the "engineer" in charge of the road project; and the steam engine operator would be the "chief" out at the powerhouse. A fine prospect! With all due respect for the above mentioned craftsmen, perhaps they could do our jobs better, at least in case of a union we would not be in a position to complain.

Aberdeen, Wash.,
June 8, 1937

P. R. ROSEN
Civil Engineer
Aberdeen, Washington

Sanitation in the South

Sir: It is encouraging to us in the South, as we hope it may be enlightening to those of other sections, to read the article "Sanitation Stirs the South" in your June 10 issue. This is written with an understanding of the new South and the forces that have been at work in recent years transforming this region of rich resources from sleepy agrarianism to dynamic industrialism. The land of Old Black Joe is vanishing except in song and story; in its place is rapidly developing a region of diversified industry and commerce, with all of the problems attendant upon such metamorphosis.

The picture of sanitation below the Mason-Dixon line as painted by Mr. Cleary is accurate and his examples are representative of thousands of things that are being done in this region for the improvement of the environment and the promotion of the public health and comfort. Moreover, his picture is symbolic of the advances that are being made in other fields,—in transportation, housing, manufacturing, agriculture, government and education.

Those endemic diseases of the South, typhoid fever, hookworm and malaria, which have been millstones around the neck of our progress for generations, are being conquered primarily by the intelligent application of sound principles of sanitation. Within twenty years my own State, which may be considered typical of the South, has reduced its typhoid rate by more than 85 per cent,—and the other maladies subject to environmental control are showing a similar decrease at the hands of the sanitarian and the engineer. Our citizens and visitors find confidence in the universal high standard of safety of the public water supplies, and we pride ourselves that, with few exceptions, our water purification plants are under the direction of college-trained operators furnished with the working tools of completely equipped chemical and bacteriogolical laboratories. Similar protection to the public health is afforded by properly supervised abattoirs, pasteurization plants, swimming pools and incinerators which are rising in cities, towns and villages and which are designed and operated by modern standards.

It is encouraging that our municipalities now install sewage treatment plants to treat sewage, instead of merely satisfying the minimum technical requirement of a health agency or providing a weapon of nomenclature to be used in defense of damage actions brought against them. It is a far cry from the day of the old septic tank—usually installed under protest, designed by a nincompoop, then deserted and forgotten—to this modern day when officials and citizens are cognizant of health hazards and conscious of their civic duties, when engineers are capable to design and construct efficient works and operators trained in their proper performance. The South, profiting by the modern revelations of science and by the pathetic experiences of the more populous and highly industrialized areas of the country, does not intend to relegate its relatively unpolluted streams to the status of open sewers. It is practising the ounces of prevention now that are worth many pounds of cure in the years to come.

Prominent among the factors which are bringing the new day in sanitation to the South are its educational institutions. The public schools are teaching the rank and file of the population the public health values in a clean environment; the institutions of higher learning are training sani-

tarians, sanitary engineers and health officers in the basic sanitary sciences and the methods of attaining this objective, and are conducting research directed toward the solution of regional problems.

The writer is not a chamber of commerce secretary, but merely a teacher of the elemental principles of sanitation, who is of the South and interested in all that pertains to its welfare and advancement.

Chapel Hill, N. C.
June 15, 1937.

H. G. BAITY
Professor of Sanitary Engineering
University of North Carolina

Less Ballyhoo Wanted

Sir:—Glad to see you hit the ballyhoo and buncombe that some misguided engineers like to print under the fond delusion that it will advance the status of the engineering profession.

Brooklyn, N. Y.
May 17, 1937

A MEMBER
N. Y. State Soc. of Professional Engineers

Soil Loss in Potomac Flood

Sir: Current interest in soil erosion warrants presentation of the following information with respect to the silt loads and corresponding denudation over a drainage basin, related to one flood on one river:

During the Potomac River flood in April 1937, which had a computed crest discharge of about 348,000 cu. ft. per sec., three sets of silt samples were collected at Washington by the U. S. Geological Survey from Long Bridge, commonly known as the Highway or 14th Street bridge. The crest of the flood passed Washington about 4 a.m., April 28, as shown by the chart from the recording gage near Washington. The first set of silt samples was collected at 10 a.m. of the same day, or about 6 hours after the crest of the flood had passed; the second set was collected at 4 p.m. of the same day, and the third set at 1 p.m. on the 29th. Each set consisted of 11 samples taken at uniform distances across the river, which is about 0.4 mile wide at this point. The maximum depth at which samples were collected was about 10 ft. below the surface.

The average concentrations of silt in the three sets of samples, in the order in which they were collected, were 1,640, 1,130, and 385 parts per million. The concentration of each sample in a set agreed closely with the average for the set; the maximum departure of any sample from the mean for the set was 10 per cent, while most departures were only 3 or 4 per cent. These results indicate that the silt was fairly uniformily distributed across the section.

For computation of the daily loads of suspended matter a maximum silt concentration of 2,000 p.p.m. was estimated for the peak stage of the flood. Rates of silt movement in tons per hour were computed for the three sets of samples and for several other times when the silt concentration was estimated.

The maximum rate of silt movement, computed for the observed concentration of the first set of samples, or 1,640 p.p.m., was 61,300 tons per hour. The maximum rate computed for the crest of the flood, based on the estimated concentration of 2,000 p.p.m., was 78,300 tons per hour. The total load of suspended matter carried during the five-day period April 26-30 was computed to be about 2,210,000 tons.

The computed daily loads together with approximate values of mean daily discharge (unpublished) for these days are given in the following table.

Date, April 1937	Mean daily discharge, sec.-ft.	Daily loads of suspended matter, tons
26	56,000	30,700
27	250,000	673,000
28	310,000	1,250,000
29	170,000	230,000
30	87,400	28,000
		2,211,700

No measurements have been made of the total load of suspended matter carried by the Potomac River during a year. However, daily measurements of turbidity of the river water made at the Dalecarlia filtration plant indicate that with the exception of years of big floods like 1936 and 1937 the total annual load of suspended matter is probably rarely much greater than the load carried by the flood of April 26 to 30, 1937.

The drainage area of the Potomac River basin above the gaging station near Washington, D. C., is 11,560 sq. mi. Thus the amount of material removed from the drainage basin from April 26 to 30 averaged about 190 tons per square mile. If it is desired to express this loss of material in depth over the drainage basin, it is necessary to use a volume-weight conversion factor. On the assumption that one cubic foot of dry material weighs 85 lb., the 2,210,000 tons carried off during the five-day period would represent material spread evenly over the drainage basin to a depth of 0.002 in.

Mechanical analyses made of two samples from each of the three sets collected indicate that the average particle diameter of 10 or 12 per cent of the solid material carried in suspension was greater than 50 microns and that the average particle diameter of 70 or 75 per cent was less than 20 microns.

The load of 1,250,000 tons of suspended matter carried by the Potomac on April 28 is a large load, but is often exceeded by the loads carried by the Colorado River at Grand Canyon, Arizona. Water-supply paper 636-B gives records of 19 days in the year 1926 and 32 days in 1927 on which the daily load of suspended matter in the Colorado River at Grand Canyon was more than 1,000,000 tons.

The discharges on these days were nearly all between 40,000 and 10,000 sec.-ft.

The Potomac with its maximum content of suspended matter of about 2,000 parts per million in the April Flood may be considered a fairly clear stream compared with the Colorado at Grand Canyon.

Washington, D. C.
June 7, 1937

S. K. LOVE
Chemist
U. S. Geological Survey

Diesel Maintenance Not High

Sir: May I express a little disappointment in what you said about diesel locomotives in your issue of June 10? It is true they cost more per horsepower than steam locomotives, but I think you are jumping at conclusions when you say they have high maintenance costs.

I had some experience with three of these machines when they were installed on the Northampton & Bath R. R., owned by the Universal Atlas Cement Co. Certainly the maintenance cost has been low up to now, and nothing has developed to indicate that these machines will have anything but a long life.

Chicago,
June 15, 1937

B. F. AFFLECK

ENGINEERING NEWS-RECORD

Volume 118, Number 25

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JUNE 24, 1937

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ENGINEERING LOST TWO LEADERS with the passing of Harrison P. Eddy and Ambrose Swasey last week. Though they were nearly a generation apart in age, each placed his impress on his profession by virtue of strong human qualities as much as by what he accomplished in his chosen field. Swasey advanced the art of precision machine construction, and by applying it to the difficult problems of building large telescopes enlarged the powers of astronomical investigation; Eddy, by leadership in the large service that sanitary engineering has rendered to the twentieth century, placed the world under an obligation no less significant. Both men were a source of strength to all who knew them, through uprightness and love of truth. Engineering needed them, and in future will need more of their kind. It also needed and will continue to need the inspiration to advancement of knowledge that was given by Swasey when he endowed the Engineering Foundation, for the future of engineering no less than its past rests on continual truth-seeking through study and research.

Face Saving?

IT IS REPORTED in Washington that the three public power districts in Nebraska now engaged in building hydro-electric power plants are laying plans to buy out the local privately owned electric utilities. This move is not in line with the plans of the more extreme of those who have been active in pushing the government into the power business. They prefer aggressive competition. The present proposal seems to lean toward the plans of the idealists like Arthur Morgan who would have the maximum of cooperation so long as the privately owned utilities meet the government halfway. But the situation of the Nebraska public power districts gives reason to question the altruism of the present proposal. The Platte Valley district is involved in difficult operating problems; Loup with its desilting works and long canals probably has equally difficult problems ahead, and in the Tri-County district there is serious question as to whether the district can obtain the water it needs. Under these circumstances may the present move be one of face saving? By purchasing existing power stations and transmission lines the power districts could soon begin to supply power regularly and thus could cover up the failure of their much publicized water power projects.

Keeping Pace

DRIVING THE SUBAQUEOUS SECTION of the new Lincoln Tunnel marks an advance in shield tunneling well in pace with progress in other types of construction. Just as suspension bridge erection methods survived without substantial change from the days of the Brooklyn Bridge to the George Washington Bridge, shield driving adhered closely to the procedure developed in the early days. But the Lincoln Tunnel was speeded up to new progress records by ingenious devices and skilful management. A mechanical bolt tightener and a separate hoist rig for handling the iron decreased the time required for erection of lining; belt conveyors assisted in removal of muck from the shield. On top of the mechanical improvements the contractor achieved a remarkable coordination of the various activities to reach new levels of efficiency. The result is a definite advance in the art of tunneling, confirmed by more recent progress on a Detroit sewer tunnel, where the 47½-ft. daily record of Lincoln Tunnel has already been exceeded.

Portal Road Problems

AS A. W. DEAN, master roadbuilder for a generation, points out on a following page, under modern conditions the bypass and city access road built to relieve urban transport soon becomes another city street, with all the usual hampering obstacles of business haulage, parked cars and dense pedestrian use. When that happens, through traffic no longer has the intended freeway, provided at great cost, and again must battle for a place with local vehicle and pedestrian congestion. What is the remedy? Mr. Dean out of his long experience confesses his difficulty in finding a positive answer. And it is probable that no answer will be found until we change our conception of the bypass and portal road as a common road. These costly thoroughfares must be isolated from local transport use, and the needs of business and residence alongside must be serviced by separate roads. This truth presents a problem to which state and city highway officials need to address themselves seriously.

The Open Road

IN A THOUGHT-PROVOKING talk to a publishing group a short time ago, Dexter S. Kimball, dean emeritus of engineering at Cornell, surveyed the vast future possibilities of industry and engineering in a manner that could not but bring up the wish that every recent engineering school graduate had

been present. Machines, processes and materials were cited by Dean Kimball as everywhere made obsolete not by wear and tear but by the development of better machines and materials; cited also were new materials and new knowledge of the composition of matter, the possibilities of which we have only begun to explore. Dean Kimball's message to his immediate hearers was that they must be on their toes ready to take the lead in demonstrating the potentialities of new developments. The message is equally important to the young graduate, but for him it has a double significance. In the first place it serves to dispel the idea that all the frontiers have been found and explored; but in addition it is a challenge to him to see that he has a place on the wide road that science has opened up to industry of the future.

Labor Problems

LABOR UNREST approaching civil war in bitterness and lawlessness today has large sections of the manufacturing industry in its grip. Many of its underlying causes extend also to construction. Will construction suffer similarly?

Important data that bear on the answer are given in a survey report of construction labor conditions printed in this issue. The industry's troubles so far have been insignificant compared with those that are sweeping the automobile, steel and other fields. Our survey also gives the reassuring indication that nothing comparable to the present disruption of manufacture is now in prospect for construction. But apart from this single fact its results are disturbing, since they show that no successful and assured approach to the settlement of labor questions in construction has yet emerged.

To summarize the facts brought out:

1. Unionism is rapidly extending from building to open construction and is gaining strength in building;

2. So far there is little CIO strength in open construction, but mainly AFL progress;

3. Construction wages are rising and the cost of construction is rising to correspond;

4. Shortage of skilled mechanics in some crafts and some areas is threatened;

5. Contractors are meeting labor's demands in various ways, but are not adequately organized to meet the situation;

6. Many or most contractors lack faith in the ability or willingness of labor to stick to agreements.

Two problems lie ahead: first, to discover and apply a method by which reasoned settlement of labor disputes can be attained; second, to put an end to jurisdictional disputes. In respect to both problems, construction labor relations differ widely from manufacturing labor relations, primarily because of lesser continuity of employment, greater mobility of labor, and more local character of labor group organization.

In the first of these two problems, prospects are distinctly brighter than in the manufacturing field. The method of agreement between labor groups and employer groups has already reached a point of much promise, though tried as yet in only few localities. In the second problem, jurisdictional disputes, no progress whatever has been made. This is labor's failure alone, for it alone is responsible for jurisdictional disputes and it alone has the key to them.

It is clear that any labor settlement must protect the efficiency of construction. Unless we build faster, better and at lower cost, construction cannot pay a fair return to either worker or employer. When workers attempt to interfere with management efficiency by depriving the employer of his right to select his own labor or to assign their duties, they work against their own interests.

And protection of the worker also must be kept in mind. Many labor-regulation proposals today are trending in the direction of a uniform wage level, which will irresistibly carry us to uniform mediocrity of performance—a result fatal to skill, to progress, and to the welfare of the worker.

On the facts of today the following points may be set down as essential to any successful plan of arriving at construction labor agreements:

1. Adequate organization of contractors;

2. Definition of labor agreement areas uniform for all construction activities and crafts, and preferably statewide;

3. A definite term for every agreement, and judicial protection of agreements during their life;

4. Full provision for apprenticeship;

5. An open field for workers, whether previously engaged in construction or not—a vital essential in all open construction except for the key body of skilled men;

6. Acceptance of responsibility by labor for intra-labor differences and for maintenance of agreements;

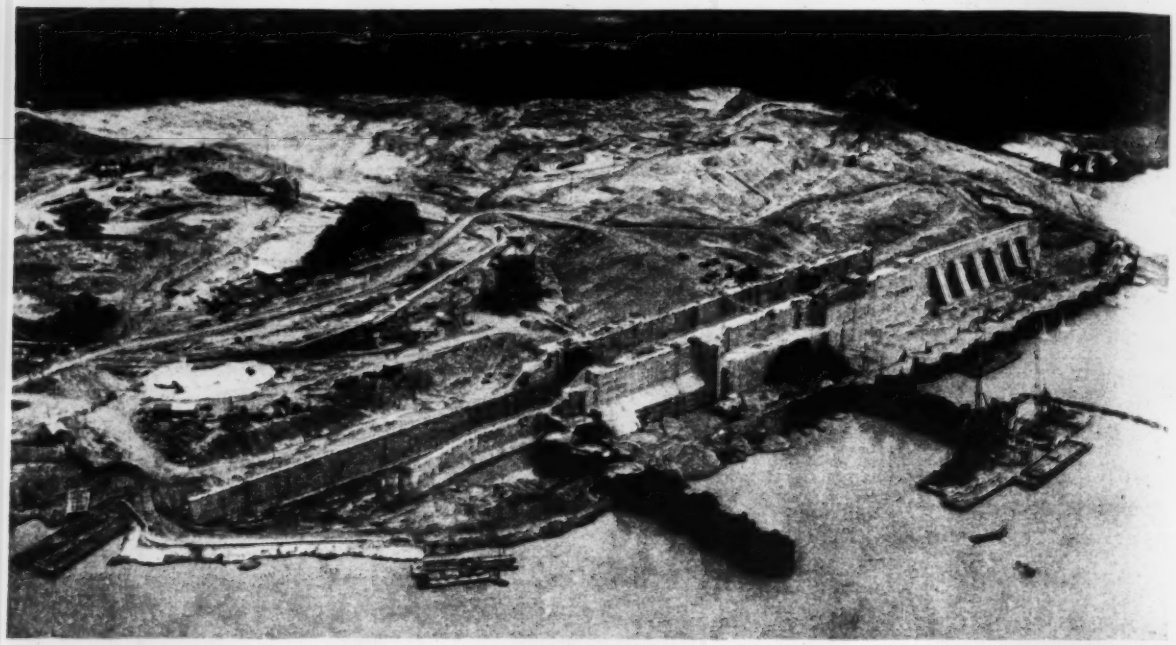
7. Labor exclusion from management decisions;

8. Provision of means to keep prices below the economic limit;

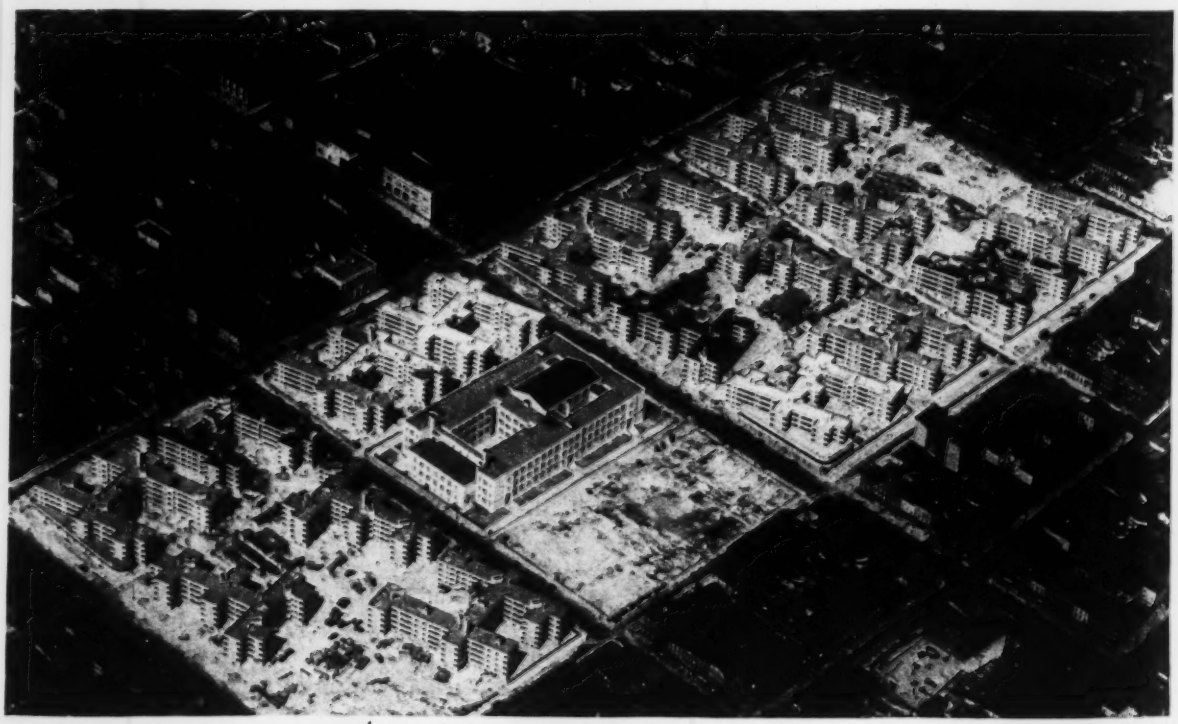
9. Assurance of increase in labor efficiency to hold down or decrease costs, and exclusion from agreements of any provision operating to limit labor efficiency.

To summarize: the immediate problems are to wipe out the jurisdictional dispute and to find a proper area basis and adequate safeguards for agreements between workers and employers. The objective is stability and efficiency in construction coupled with fair wages, hours and working conditions. The test is faster, better and cheaper construction, and public acceptance of the outcome.

PICTURES IN THE NEWS



THE NAVIGATION LOCK at Chickamauga Dam on the Tennessee River is nearing completion. Cofferdam No. 1, which enclosed it, is being dismantled and cofferdam No. 2, which will enclose the spillway area, is under construction in the right foreground.



LARGEST HOUSING PROJECT being built with PWA funds, Ten Eyck slum clearance in Brooklyn is rapidly approaching finished form. The project covers twelve blocks and will house 1,471 families. Superstructures are of reinforced concrete of flat-slab design. Photo by Aerial Explorations

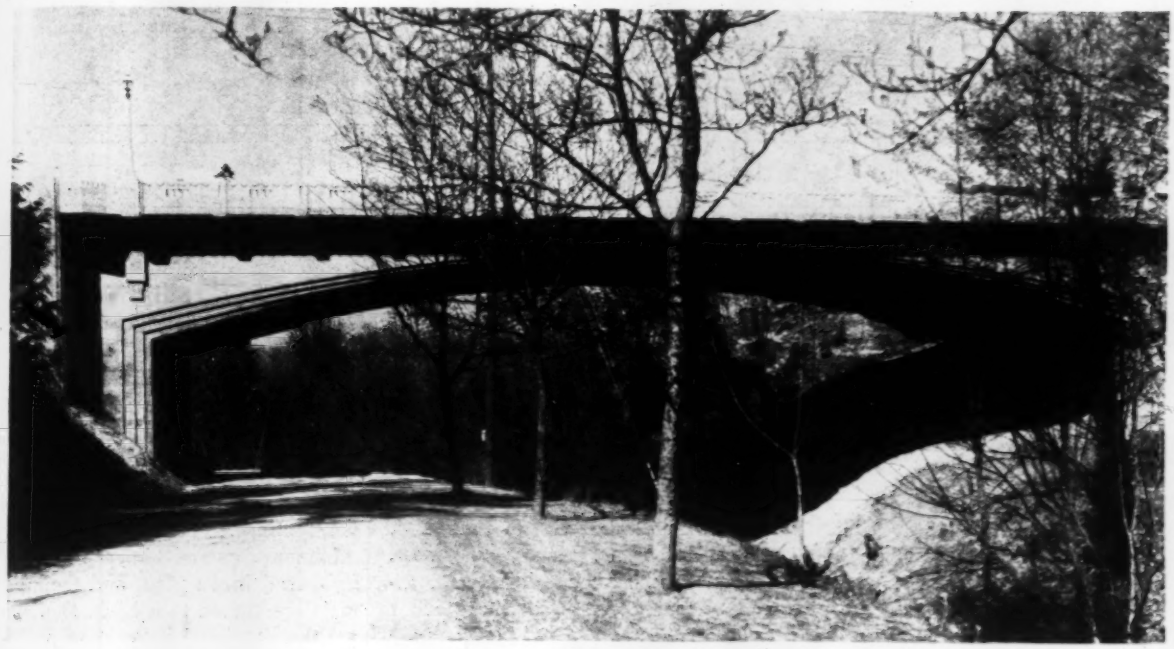


FIG. 1. SPANNING 175 FT., THIS BRIDGE IS SIXTY PER CENT LONGER THAN ANY OTHER OF ITS TYPE IN AMERICA.

Record Rigid-Frame Bridge

by J. A. DUNFORD
Bridge Engineer, City of Seattle

Unusual cellular concrete span of 175 ft., longest in this country, is also given dignified appearance to fit its scenic setting in Schmitz Park, Seattle.

A NOTABLE advance in the design of rigid-frame concrete structures has been made in a bridge of 175 ft. span recently completed across a deep, narrow ravine in Schmitz Park, Seattle. Hollow or cellular construction through the vertical legs as well as in the horizontal ribs of the four main frames of the structure and the consequent reduction of dead load made possible the 60 per cent increase in length over the country's previous record for length of span of this type of structure (*ENR* Aug. 6, 1936, p. 181). Cellular construction also showed to advantage in the heavy retaining walls which mask the ends of the main span and appear to be the wings of massive abutments; also it permitted the use of the architectural scale and size desired and freed the designer from limitations inherent in solid members.

A new bridge at this site was made necessary by the weakening and gradual decay of an old timber structure which with poor alignment and narrow, inadequate roadway had carried the traffic of Admiral Way Boulevard across this ravine for many years. The new bridge project brought opportunity for greatly increasing the serviceability and safety of the boulevard. In making studies of alternate designs that led to selection of the one here described a major consideration was the desire of residents of the district for something more than a strictly utilitarian bridge, preferably a structure of dignified appearance, suitable for a beautiful park setting.

The bridge was designed for standard H-20 loading and impact. The main structural members of the bridge are four large hollow rigid frames set side by side. They are 8 ft. in width and of a depth averaging 5½ ft. at the crown and 18½ ft. at the haunch where, with a large circular sweep the horizontal girders connect with the legs. The legs taper down to an 8x8-ft. section at the top of the footings. At the bottom of the girders and on the inner face of the legs the 8-ft. breadth is reduced in one or more offsets as required by the architectural design. At the haunch the girders have about 21 ft. clearance over the roadway in the park. The rise of the girder intrados from haunch to midspan is 13 ft.

The roadway requirement was for a width of 54 ft. with two 6-ft. sidewalks. To keep the handrails as low as possible and to avoid obstructing the view from automobiles, the sidewalks are located at roadway level from which they are separated by the heavy 12-in. curbs. Handrails are 8

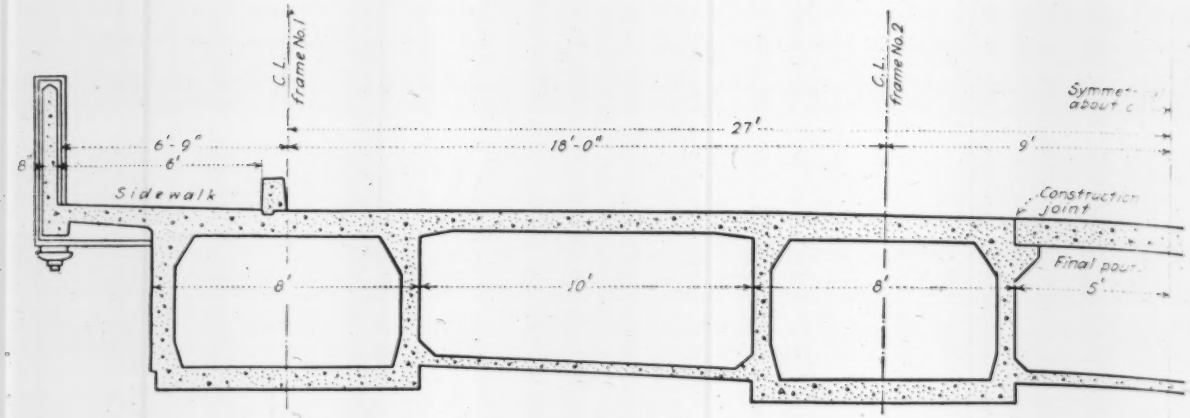


Fig. 2. Cross section of the box girders at the center of the 175-ft. span.

in. thick between pilasters. With this arrangement the deck has a net width of 69 ft. 4 in. Width of the four rigid frames plus the spaces between them totals 62 ft., thus giving a cantilever overhang of the sidewalks and handrails of 3 ft. 8 in. on both sides.

Details of these rigid frames appear in Figs. 4 and 6. The horizontal portions or girders are braced and stiffened at the top by the roadway slab and at the bottoms by filler slabs, $2\frac{3}{4}$ in. thick, which close the 10-ft spaces between girders and give the arch the appearance of extremely massive construction. In addition to top and bottom slabs there are transverse stiffening frames between the girders, and within the girders are stiffening beams and fillets. At the haunches are two inclined diaphragm frames, radiating from the springline.

The top slab of the girders, which in part forms the deck, is $9\frac{1}{2}$ in. thick increasing at the haunches to $15\frac{1}{2}$ in. to receive the heavy mass of reinforcing required there. Distributed uniformly across the 8-ft. breadth of frame are 52 round bars, $1\frac{1}{2}$ in. in diameter, and in the circular sweep at the haunch the slab is reinforced transversely between the side webs to transfer into them the radial component of stress in the main bars. The soffit slab of the girders has a thickness of 8 in. at midspan and 30 in. at the haunches. Webs of the girders are 6 in. thick at midspan and 8 in. at the haunch.

The legs of the frames are shown in Fig. 4. The front and back slabs and the side walls of these legs vary in thickness, as indicated. There are four legs and between each pair are two sets of walls. Walls on the inner face of the legs, marked "x" in Fig. 4, slope and offset deeply, are 4 in. thick, carry no load and are for architectural effect only. The rear or outer walls, marked "y" in Fig. 4, are heavy because they are designed to resist the pressure of the end fills. Both sets of walls, which were poured subsequent to pouring of the main members, fit into slots in the sides of the legs. The walls are designed as simple, non-continuous spans.

The legs of the frames are solid at the bottom, terminating in rocker bearings which are segments of cylinders 5 ft. by 6 ft. in plan, fitting into similarly shaped sockets in the tops of the footings. These sockets have a minimum depth of 8 in., are 5 ft. $\frac{1}{4}$ in. by 6 ft. $\frac{1}{4}$ in. in plan, and their bottoms are curved to a 15-ft. radius as are the bottoms of the legs. Sockets are lined with $\frac{1}{8}$-in. asbestos packing. A 1-in. layer of asphaltic filler was placed over the marginal area surrounding the socket and beneath the square base of the leg.

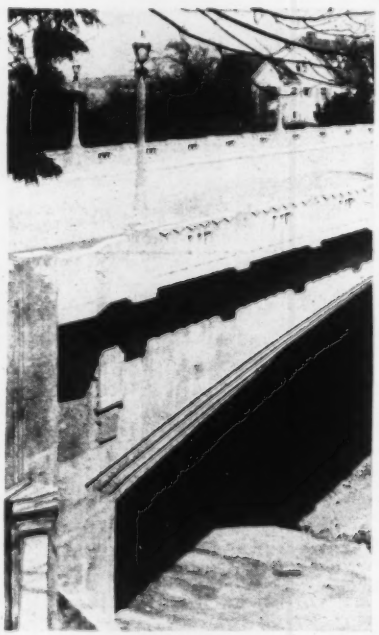


Fig. 6. Simple architectural detail gives a dignified appearance.

The foundation material is of glacial origin; on the west side footings rest on firm sand; on the east side the sand has intermingled with it some layers of firm blue clay. The original thought was that it might be necessary to erect the bridge one half at a time, and it was then planned to make the footings in separate halves, each of which was to support two frames. At the west end the footings were so built. On the east end where the clay layers were found, it was deemed advisable to combine the two blocks and the footings there were constructed as a monolith.

At both ends of the span heavy earthfills bear against the back of the legs of the frames and against the heavy slabs which span between them. These fills are retained at the sides by hollow, vertical-celled retaining walls which fit against the legs of the outer frames but are separate from them. They appear integral, however, and together create the appearance of massive abutments. Opposite retaining wall sections are connected to one another by transverse tie beams which, with intermediate supports, extend through the fills. Elsewhere the retaining walls are tied back to anchor walls embedded in fills which were puddled to speed consolidation as they were built up. The hollow

wall sections are filled with earth.

Except in the footings, where a mixture using 1.4 bbl. of cement per cu.yd. was employed, the concrete of the bridge was Seattle's standard class "B" concrete which contains 1.8 bbl. per cu.yd. This was mixed at a central mixing plant and hauled about 3 miles to the job. Strengths of 28-day cylinders were: high, 5,208 lb.; low, 3,045 lb.; average, 4,166 lb. per sq.in. Working stress in flexure was 1,200 lb. per sq.in. and in shear, 180 lb. Intermediate grade reinforcement was used with working stress at 18,000 lb. per sq.in. The main reinforcement of the frames consisted of 1½-in. round bars, welded where necessary. Particularly in the haunch sections at the junction of legs and girders where the bars are bent in a long sweep, it would have been difficult to handle them in one continuous length. Consequently they were assembled in two pieces and then welded together. The several sets of welds were widely staggered.

Complications in forms resulted from the complex requirements of crown and grade. Longitudinally the grade is about 2 per cent, descending to the west. For most of the span length the roadway is on transition for the sharp curve that begins 37 ft. before the westerly end of the structure is reached. On tangent approaching the spiral, the roadway has a transverse, parabolic crown of 7¾ in. while on the full curve this crown is given a superelevation of 19¾ in. The superelevation is developed gradually of course on the spiral. The four box frames on which the deck is supported are straight from end to end.

Under these conditions formwork problems were highly unusual. To meet this situation the contractor rented a mold-loft, laid out all difficult forms to full scale, and built them up in panels and sections as large as could be hauled to the job conveniently. For the mold-loft work, University of Washington students with a good working knowledge of descriptive geometry were secured, and were found to be very valuable. Forms for all exposed surfaces were lined with three-ply wood veneer.

For erecting the girder span, eight longtitudinal rows of piling were driven, located below the webs of the box girders. These were cut off and capped at the plane of the springlines and were completely floored over for

Fig. 3. Under side of the span showing soffits of the four main ribs with filler slabs between the hollow ribs.

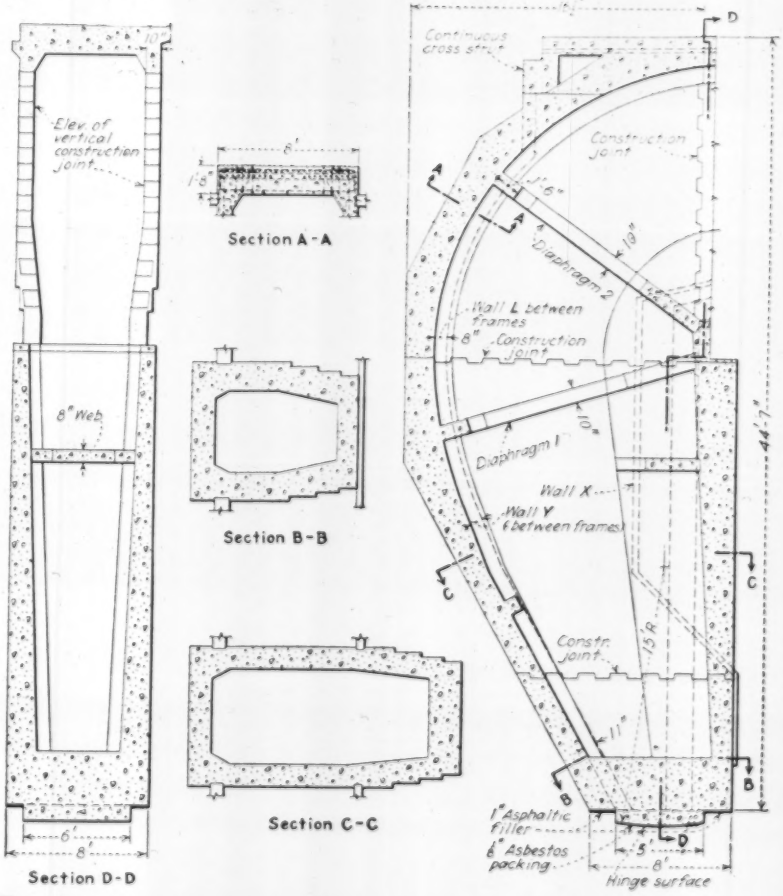


Fig. 4. Details of leg members of the Schmitz Park rigid frames, featured by hollow construction and haunched outline.

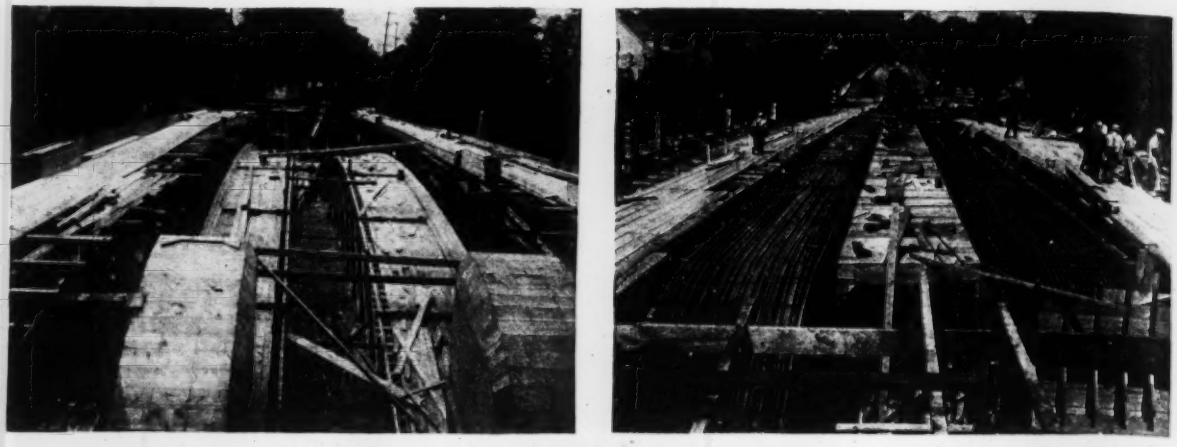


Fig. 5. Construction views, taken at deck level, of the forms and heavy reinforcing.

a working platform and also as a safety precaution. This platform served as a working floor while the upper formwork was erected and then it was used to brace and support the forms above.

With some minor variations, the pouring procedure on the main frames was as follows:

1. Footings.

2. Legs (in two pours) up to the horizontal joint at springline.

3. Soffit slabs of frames, one at a time; then the intermediate slabs 2¾ in. thick.

4. Webs of the frames, between vertical construction joints at opposite springlines.

5. Deck slab in three longitudinal sections or strips. The third strip consisted of 10 ft. of roadway along the center line of the bridge, closing the gap between the two earlier pours which included roadway and sidewalk on each side of the 10-ft. center strip. Integral with these deck pours the hip sections between the horizontal and vertical construction joints at the springline were poured.

6. The handrails. These, being quite frequently jointed, were poured before the falsework was removed from beneath the deck.

After removal of the falsework, the observed deflection at midspan was ⅜ in. This was in the fairly warm weather in the fall of 1936. During the cold weather of January, 1937, a horizontal shortening of the ribs of about ¼ in. occurred accompanied by additional deflection at midspan, making the total deflection at that point slightly less than ¾ in.

The completed bridge is shown in Fig. 1. The narrowing and offsetting of the bottom of the frames as the haunches are approached and the continuance of these lines down the faces of the piers suggests the action and strength of great springs and creates an attractive and pleasing effect. Treatment of the handrails has proved very satisfactory; the fluting and formwork is simple and although the railings are solid they have an appearance of lightness which is aided by the small open panels with the little monolithic spindles. These open panels are located midway between the pilasters and centered on each of them is a ½-in. opening completely through the railing from top to sidewalk level.

The bridge was designed by and constructed under the supervision of the engineering department of the city of Seattle, headed by N. A. Carle, city engineer. The design was prepared when Clark H. Eldridge, now bridge engineer of the Washington state highway department, was bridge engineer of Seattle. Arthur J. Mahoney, of the city bridge department, prepared the architectural design. The writer has been city bridge engineer during the time the bridge has been under construction.

Schuehle Bros. are the contractors whose effective construction methods have resulted in an exceptionally fine piece of work.

Bay Bridge Traffic Heavy In First Six-Months

TRANS-BAY auto traffic has been more than doubled by the advent of the San Francisco-Oakland Bay Bridge, according to figures for the first six months of operation issued by C. H. Purcell, state highway engineer. In the last full year of ferry operation without bridge competition (1935) about 4,000,000 vehicles crossed the Bay on ferries. Combined bridge and ferry traffic in 1937, based on present indications, will exceed 9,000,000 vehicles, an increase of 125 per cent over 1935. If 25 per cent of the increase is attributed to general business recovery, the bridge still would be credited with doubling the traffic.

MARCH, 1937, TRAFFIC ON REPRESENTATIVE TOLL BRIDGES

Structure	*Traffic*
1. Holland Tunnel, New York	1,005,277
2. Delaware River Bridge, Philadelphia	866,566
3. San Francisco-Oakland Bay (Feb.)	294,608
4. Triborough Bridge, New York	698,091
5. George Washington Bridge, New York	492,027
6. Covington-Cincinnati Bridge (Feb.)	294,608
7. Louisville Bridge	139,512
8. Carquinez Bridge	127,363

The average for the first six months of operation was 24,357 vehicles per day, and total income for the six months from November 12, 1936 to May 11, 1937 was $2,575,000. During the last three months of operation with ferry tolls and bridge tolls equal, the ferries carried 4.15 per cent of the total number of vehicles and collected 8.64 per cent of the tolls. The larger ratio to vehicles on the ferries results from the fact that 38 per cent of the ferry traffic is trucks in comparison to 3.22 per cent of the bridge traffic. Trucks on ferries average 2.16 tons in weight as against 1.12 tons on the bridge.

CONSTRUCTION LABOR IS THE UNCERTAIN ELEMENT IN A GREAT INDUSTRY

Labor: Construction's Big Worry

Incipient shortage of skilled mechanics, advent of unionism into new territories, jurisdictional disputes, mandatory public works requirements and general labor unrest raise havoc in the industry

Report of a field survey by H. W. Richardson, Associate Editor, Engineering News-Record

LABOR is an uncertain element in construction today, and is the industry's chief worry. Caught in the general labor unrest, construction workers are joining the nationwide move for organization and higher wages. The situation is changing from day to day, in fact almost hourly, and contractors are at a loss how to meet it. Contractors' associations, such as the Associated General Contractors, are divided in their ranks on union labor policies, and labor is taking advantage of the fact.

Shortage of skilled workers, especially steelworkers, hoisting engineers and equipment operators, prevails in many localities. Though not serious in May, this shortage is sure to approach critical proportions during the summer, especially as construction volume increases over that of last year. Last summer the lack of skilled workmen was acute in numerous places, but the labor supply increased as work slowed down for the winter, and a delayed start of projects this year because of an abnormally wet spring postponed the inevitable shortage of good mechanics.

This is a summary of the labor situation made from observations on a 5,000-mile swing through the East and Mid-West. Few general conclusions can be drawn because of the wide variation in conditions between different localities, ranging from chaos in some places to serene indifference in others. However, four facts appear:

(1) Labor relations are primarily a local problem, for local customs and attitudes dominate labor-relations thinking; (2) unionization of construction workers is rapidly spreading, and the day is coming when the industry's workers will be largely organized; (3) lack of apprentice training will inevitably result in a serious shortage of skilled workmen, the greatest problem construction faces in the near future; (4) labor rates are steadily increasing, which, coupled with rising materials prices, threatens to boost construction costs to a point where volume of new work will be greatly curtailed—this has already taken place in some centers, such as Detroit.

Union activities

The situation in regard to union activities is highly confused. Contrary to general belief the CIO has not entered the field of construction east of the Rockies. Heavy and highway construction work, formerly ignored by labor organizations except in and near a few larger cities, is now being organized on a large scale, mostly through AFL building trades or affiliated groups. Building construction in communities for-

merly working open shop or under the so-called American Plan is likewise becoming organized.

In Colorado armed guards patrol several highway jobs near Denver to keep union organizers off. In Indiana an AGC group of highway contractors has amicably signed up with several trades unions, and in neighboring Illinois they are formulating a similar plan.

Missouri heavy and highway contractors are on the fence—half want to go union and some already have done so, while the others stand fast for continuing open shop policies. Ohio highway builders serenely proceed without trouble under the protection of high mandatory wage rates on state work equal to union scales.

In Buffalo, where construction is wholly unionized and even a group of open-shop outside contractors has organized informally to deal with union labor on large sewer work, jurisdictional disputes are unknown, for an intelligent labor leadership regards jurisdiction as a problem to be settled in the labor meeting halls. In New York City jurisdictional scraps are raising havoc and unions are suing each other and contractors, while in Chicago the claim of various trades to certain work causes exasperating delay and expense to contractors but so far has not resulted in inter-union difficulties.

AGC attitude undecided

The Associated General Contractors, strongest national organization of contractors, has taken no definite stand toward union labor relations. Many of its members have worked union labor for years, but a greater number have never operated union, and many of these latter are absolutely opposed to dealing with labor organizations. Because of this opposition the various chapters have been left free to work out their own labor relations without commitment of other chapters or the national organization to any definite labor policy. Consequently, some chapters are standing on the open-shop proposition, others favor the closed shop, and still others are divided and uncertain as to the course of action. In some places those AGC members desiring to negotiate with union labor have set up local associations.

In sharp contrast to the experience in other industries, the spread of unionism in construction and the granting of higher wage rates have come about with few strikes or other labor disorder. Construction of all kinds was tied up in Cincinnati for two weeks when organized common laborers struck for 75c. per hr., an increase of 15c. After all their compromise rates had been rejected, the contractors finally met the demands and 6,000 workers returned to their jobs. In Colorado all union plasterers are out, demanding $1.50, an increase of 25c, though the state industrial commission, which sets all rates on public works, awarded them $1.43. Lack of work at present largely nullifies the strike; three buildings in Boulder are being worked under special agreements between the subcontractors and plasterers. Plasterers are also on strike in Detroit, but here again there is little work at the moment to be affected. Union roofers in Omaha are on strike for higher wages, and some work is tied up.

Heavy construction in New York City is disrupted at present by inter-union fights. Two locals are suing three others (AFL affiliates), and several contractors over jurisdictional rights on open-cut excavation and free-air tunneling. One strike has already taken place on the Sixth Ave. subway because of this controversy, and others are threatened. However, the most disturbing jurisdictional dispute in the city at present is the claim of journeymen plumbers to all pipe work, regardless of size. This affects the subway and other heavy work in which large water mains and sewer pipes are involved. For 50 years heavy pipe work has been handled by the only incorporated union in the country, the Pipe Tappers and Caulkers Union, Inc. If the plumbers win their claim, it will be tough on contractors, for feelers already sent out to master plumbers as to cost of work indicate that the masters are unwilling to quote unit prices, but expect to work on a cost plus basis.

Labor shortage imminent

Construction is facing the worst shortage of skilled labor since the War. During the depression thousands of mechanics were forced into retirement or into other industries because of lack of work. Most of these will never return to their former trades, either because of old age or because they are satisfied in their new line. Training of apprentices ceased entirely and has not been resumed, except in isolated cases. Unions in general take the attitude that they can take in experienced new members fast enough to supply the demand for some time to come. Some contractors are training young mechanics, but on the whole the employer class has no solution to the problem of apprentice training.

The situation at present is that practically all the good mechanics are now employed, and any increase in construction volume will find a dearth of the better class of workmen. Last summer's critical shortage of mechanics is certain to be repeated this summer. In many localities the start of one good-sized job would create a scarcity of labor.

WPA has been blamed for an artificial shortage of skilled workmen, but there was no evidence to substantiate this claim found in the territory covered in the present survey. Most contractors admit that they wouldn't hire the class of mechanics still left on WPA under any circumstances, claiming they are mostly second-raters and the physically handicapped. WPA officials assert that contractors can request any relief worker, and if the requested man refuses to accept a legitimate, decent job he will be fired from WPA. If the worker does accept the outside job he is not barred from returning to WPA in case the work terminates for any reason. Some contractors claim this regulation works in theory only, while WPA workers often express doubt about getting back on relief so easily, citing difficulties they had in the first place.

Though easing up somewhat, PWA labor regulations are still onerous enough to cause difficulty in securing ample and capable skilled help on federally financed public works, and in fact are really more to blame for the labor shortage than is the WPA. Most PWA projects are still on the 30-hr. week, and good mechanics are leaving to accept jobs elsewhere at about the same hourly pay but with a longer work week. Occasionally a project is certified for a 40-hr. week, but not until the job has been seriously crippled by repeated lack of workmen.

Various union situations

The manner in which union activities are being met in the various communities is of interest. Buffalo offers an example of close cooperation between unions and contractors. The local general and building contractors anticipated the coming of unionism two years ago, and formed the General Contracting Employers Association to deal with the unions. At the same time the stronger unions formed the Basic Trades Group, and the two organizations worked out satisfactory agreements.

Several outside firms came in on the big sewer tunnel work, and announced their intention to remain open-shop as had been their custom at home. However, they found that certain classes of skilled labor could be secured only through the unions, and therefore found it advantageous to set up an association of their own to deal with organized labor. The results have been satisfactory. Labor was instrumental in getting the work-week on this PWA project extended to 40 hr. to lessen the drain on the scanty supply of certain craftsmen. Tunnel muckers imported from New York and other cities work under a fair permit system.

The Basic Trades Group is headed by a keen, intelligent chap who realizes the shortcomings of labor as well as anyone, who maintains that jurisdictional disputes shall not cause inconvenience to the contractor, and who understands that the welfare of labor depends upon the welfare of the employers.

Detroit has long been the home of the American Plan of labor relations, that is, the contractor hires whom he pleases without regard to the workman's standing with a union. However, many of the larger general contractors are now working all union men, claiming they have been forced into it by recent circumstances. The Walbridge-Aldinger Co. is an example. This firm started a PWA housing project with mixed union and non-union trades. One trade struck and picketed the job. The Reemployment Service refused to supply new men while picketing was in force, and thus the contractor was forced to go wholly union.

The local AGC chapter cannot take any definite action because of opposition to closed-shop operations on the part of a few prominent members. The Greater Detroit Builders Association, composed mostly of residential and small building contractors, has declared that it will take no new contracts until organized labor tones down its demands.

Colorado contractors fight

Building trades unions of Denver are trying to organize heavy and highway work in Colorado, and started in on a few road jobs just outside of Denver. A nasty fight occurred on one job, with the usual beatings, stonings and fisticuffs. As a result armed deputy sheriffs now patrol the projects to keep organizers away. The Colorado Highway Builders, a strong contracting group, considers it very undesirable to let the unions get a foothold in the heavy field. It regards union labor in that territory as wholly unreliable and irresponsible. As the entire highway program of Colorado probably cannot be conducted under the protection of armed guards a showndown appears inevitable.

Paving and highway contractors in the Kansas City area have signed up with union labor, and are bringing pressure to bear on other contractors in Missouri to do likewise. The territory covered by the first agreements is a radius of 25 miles from Kansas City, but by the end of the summer this territory will no doubt be greatly extended. Those contractors who favor union agreements claim that working with organized labor will stabilize both labor rates and employment.

Highway contractors of Indiana were among the first to sign statewide agreements with organized labor. Here the Indiana Highway Constructors, Inc., an AGC chapter, has signed with the operating engineers and is now dealing with common laborers. The agreement covers the entire state except Lake, Porter and La Porte Counties in the Chicago area, where separate agreements are already in force. The operating engineers' agreement divides the state into three districts, sets up wage rates for each for every class of equipment operator, and assigns every county to a local.

The contractors gained several concessions not usually found in labor agreements, one, for example, being that they can choose the man or men they want, if available, and that if the union cannot furnish the number of men requested the contractor may obtain workmen wherever he chooses without regard to union affiliation. Such men must join the union, however, or be replaced when the union has others available. Arbitration is provided for settlement of all disputes. If and when other trades prove to the contractors they are soundly organized throughout the state, it is the contractors' intention to deal with them. Outside contractors are expected to join the agreements.

Illinois highway contractors are working on a different basis. Rather than sign statewide agreements, they are dividing the state into ten districts corresponding to the highway department's districts, and are making separate agreements for each district. This is considered desirable because of lack of labor organization in some districts. The agreements are being made through the AGC highway chapter, but not as an official act of that body. Contractors who usually work in certain districts are banding together for dealing with labor. The position of outside contractors coming into the organized districts is not clear, but undoubtedly they will also run into trouble if they refuse to sign up.

Neither contractors nor labor have made any definite move toward general organization of highway workers in Ohio, for mandatory wage rates set by the highway department are the equal of union rates everywhere. Construction work of all classes in and around the larger cities is unionized.

Heavy construction in New York City is now all union work. Rates are constantly going up, and recent agreements provide for as high as $2.00 per hr. for some crafts. The 7-hr. day predominates in the building field, and heavy contractors are now finding that the high hourly rates provided for the 7-hr. day prevail for the 8-hr. day on their work.

Situation changes rapidly

The conditions cited in this article are those encountered late in May. Many of them are in a state of flux, and changes come overnight. In general labor is restless and dissatisfied, and is out to get all it can while getting is possible. What the situation will be next month no one can tell.

Bypass Roads and City Access

by ARTHUR W. DEAN

Chief Engineer, Massachusetts Planning Board, Boston, Mass.

Some problems of getting traffic past cities or into them and dispersing it without congestion

City access and bypass roads are far from being solved problems in highway planning. What is gained and lost by bypassing? What happens to bypass roads as bypassed communities grow? And when the query comes to city access roads, who can point to many that are definitely successful? In raising these questions inferentially, Arthur W. Dean, formerly for 25 years chief engineer of the state highway department of Massachusetts, contributes a timely discussion that is worth reading. —EDITOR

ABOUT three decades ago, when motor travel and transport had reached considerable magnitude, the problem uppermost in the minds of highway engineers was to provide road surfaces that would withstand the new type of wear and tear caused by self-propelled vehicles. Later, with rapidly increasing travel volume and speed, attention turned to the need for wider roads, better alignment and the adoption of designs and methods for the prevention of accidents. These problems are still with us, but added to them is a relatively new one—that of routing the growing amount of through traffic around congested centers and of providing entrance and exit facilities in our larger cities that will be capable of handling the heavy volume of intercity travel in addition to the local and suburban commuting traffic.

An analysis of accidents, including particularly fatalities and serious injuries, shows that a large percentage occurs on congested city streets. Trunk-line routes in many instances run through these districts on streets which not only are crowded but are intersected frequently by crossroads. One of the most effective means of overcoming this difficulty, obviously, is that of diverting the through traffic around the centers of congestion, or, better still, have it bypass the city or town completely.

A number of years ago, when this method first came up for wide consideration, the merchants of most communities seriously objected to it on the ground that valuable transient business would be taken from them. Undoubtedly this thought has been largely responsible for the slow development of adequate bypass roads.

Gradually, however, more complete research and experience are convincing the store owners that it is no benefit to have main routes of travel pass their doors. The realization has come that it is not the people who pass a store that make business, but rather those who stop. Serious congestion of traffic reduces the number of cars that will stop for shopping. Consequently the majority of merchants today are coming to favor the elimination of through travel from the city streets, in order to give better opportunity for the local traffic which belongs there.

With the powerful influence of local chambers of commerce and boards of trade largely removed as an obstacle to city bypasses, we undoubtedly shall see this effective method brought into much more general use. The benefit is so obvious that few data have been gathered to prove it. In the state of Massachusetts, where the city bypass already has been undertaken rather extensively, the actual figures are lacking which would show definitely the profit obtained.

They do save money

Originally, nearly all through roads entered each city and town along the route, many of them passing directly through the business section. The inconvenience and monetary loss to motorists and the attendant confusion in the city's traffic made it quite evident that the principle was wrong, although no one bothered to calculate the damage in dollars and cents. Frequently, even in small cities, 14 min. may be required to travel one congested mile, and in that mile sufficient fuel is used to go 4 mi. and enough time to go 10 mi. on the open road.

As an approximation of the saving which city bypasses may bring to the motorist, let us take the case where congestion makes the operating expense of 1 mi. as great as that for 4 mi. of clear road. The operating expense of 3 mi. is wasted, and if the cost of the ordinary passenger vehicle is 4c. per mile, this makes a loss of 12c. per vehicle. The average car carries an operator and one passenger. They each waste 13 min. Their time may be worth much or little, but assuming that it is worth 60c. per hour, they are wasting 2c. per min. for 13 min., which is equivalent to 26c. per vehicle, the total including the operating cost being 38c. per vehicle. Thus for one thousand cars per day the waste is $380 per day.

This calculation refers only to passenger vehicles and, of course, must be raised considerably if trucks and vans are included. Even as it stands, however, if capitalized on a 4 per cent basis, it shows that an investment of $3,470,000 for a bypass is financially justified. There are many congested areas in cities throughout the United States on which the traffic exceeds 10,000 cars per day and on that basis $34,700,000 would be justified.

City growth crowds up

Looking ahead, still another problem in this connection seems sure to arise, in fact, it has already occurred to some extent where important city bypasses have been built: How can these bypasses on the outskirts of the city be kept free from interference? No sooner is the road constructed than quick-lunch stands, filling stations and other attractions immediately spring upon the roadside, causing a rather serious hazard by reason of cars parked close to the road area and because of the traffic which leaves and enters the highway at such points.

Some authorities have suggested that the so-called freeway may be a solution and this may be true in certain instances, especially in more thickly settled localities. Where the bypass or any part of a route highway runs through sparsely settled country, however, it is a serious question wheth-

er the opportunity for developing roadside business should be too much restricted. Possibly a system of zoning by the local communities might be good, so that the stands would have to be located some distance apart.

The writer believes that the most practical solution lies in providing for sufficient setback of all buildings along a through highway, so that an area will be left beside the road of sufficient depth and length to permit vehicles to leave the main highway at almost their usual speed and have room to slow down within the parking space at one side. Likewise sufficient area for clear vision must be provided so that cars entering the highway from the parking space can weave into the passing traffic without seriously interrupting it.

Unless some provision of this sort is made, we shall find the advantages of the bypasses and of the main through routes themselves seriously diminished each succeeding year. Routes which now lie for the most part through open country will be crowded with stands and shops which find a profitable business from the passing motorists. Their very existence proves that they fill an economic need and consequently should not be prohibited. At the same time, they must be regulated in some way so that the speed and safety of the through highway will not be materially diminished. Sufficient setback seems to be about the best solution.

Worse access problems

The problem of providing adequate entrance facilities to cities is always difficult because of the great expense involved. Although bypasses for through traffic greatly relieve the burden, still there is hardly a large city in the country which enjoys satisfactory means for the dispersion of traffic at its major entrance points. Almost invariably the motorist enjoys splendid roads up to the point where he reaches the city of his destination and there is met by a traffic jam which takes up much of the time saved en route. This problem is common to nearly all cities and yet involves such specialized treatment in each that there is little of a general nature to be suggested. Except where subways or overhead roads are provided, the aim must be to secure wide dispersion quickly so as to avoid overcrowding of any one street.

High, Continuous Truss Bridge Erected by C.C.C. Crews

Bridge of 160-ft. central span, 125-ft. above the Trinity River in California, constructed by inexperienced workmen under skilled direction

ERECTION of a steel bridge across the Trinity River in northern California, just completed by Civilian Conservation Corps crews under direction of the U. S. Forest Service, is of interest primarily because a very creditable steel erection job was done in safety by inexperienced workmen. Known as the Salyer bridge, the new structure is a 320-ft. continuous steel truss bridge, of 160-ft. central span and 80-ft. side spans designed for H-15 loading. The floor system and the road surface are of timber construction and the roadway width is 12 ft. This narrow width, sufficient for only one traffic lane, is used on perhaps three-fourths of the bridges built on "truck trails" of forest reserves, as such roads serve remote regions primarily for fire protection, and vehicle traffic is infrequent. In this particular case the new bridge replaces an old suspension bridge (with a safe load limit of 1½ tons) which gave the only access by motor vehicles to a forest area of 35 sq. mi.

Several features of the design were governed by the plan to erect the bridge with C.C.C. labor exclusively. A major item in this class was the necessity of avoiding field riveting, because of the lack of experienced rivet crews. Rivet-bolts were too expensive as were machined bolts but rolled body bolts met the requirements satisfactorily for all field connections. These bolts are made by selecting, at the mill, slightly oversize steel rods and passing them through rolls which slightly compress the metal and bring the diameters to a high degree of uniformity.

Fig. 1. The Trinity River bridge erected by C.C.C. labor in northern California.

On bolt stock treated in this way the mills can guarantee that diameters will be uniform within .003 in. Thus the diameters approach the accuracy of machined bolts at a much lower price. In using rolled body bolts it is practically always possible to ream the holes slightly smaller than the nominal size (the intent is to make them about 0.002 in. under size) and thus get a driving fit.

Truss assembly

Ordinarily bridges designed by the U. S. Forest Service for assembly by the C.C.C. crews are completely assembled in the shop and all holes are there reamed to the bolt diameter. Thus each piece and plate can be match-marked and its location indicated on the erection diagram. On the Salyer bridge this practice was not followed because the fabricating shop did not have facilities for erection of the entire bridge as a whole; moreover, complete assembly of so large a structure would have been expensive. However, each individual truss was assembled flat in the shop and holes in the main members were reamed. The lateral and transverse vertical bracings were subpunched to a template.

This procedure imposed on erection crews the necessity of reaming the subpunched holes in the lateral sway bracing after the pieces had been placed and bolted temporarily in the process of erection. Partly because of this extra requirement upon erection crews and partly because of the very considerable height of the structure (the deck is 125 ft. above low water level), safety nets were thought advisable. These consisted of 15x30 ft. units of welded, wire fabric which were secured by clips to parallel cables placed 30 ft. apart parallel to the bridge center line and equidistant therefrom. Enough units were put in place to facilitate advance as the work progressed. The nets were kept directly under erection crews, and units were moved ahead toward the center of the structure as erection advanced.

The construction plant was laid out with a view to delivery of steel from an overhead cable; falsework was used only under the side spans. The high line was placed directly over the upstream truss; steel for the downstream truss was drifted by means of a line through a fall-block several hundred feet downstream. By tightening this line the hoist operator could deliver loads to the downstream truss without additional rigging. The high line was one of the first jobs assigned to the construction crew. Thus it was useful in placing concrete in the piers as well as in the bridge erection itself. Gin poles needed for the high line had to be brought in a distance of seven miles over a crooked, mountain road. As no dolly was available, the poles, which were 75 ft. long, were hauled by two motor trucks, one truck moving forward and the other in reverse.

The sequence of steel erection was as follows: First, to assemble on the ground the bent, 27½ ft. high, that rests on the concrete pier and reaches up to the lower chord of the truss. After complete assembly this was picked up bodily by the high line and set in place on the pier. Next, that portion of the truss consisting of posts and sway frame to go above and in the same plane as the bent just mentioned, likewise was assembled on the ground and then lifted bodily into place. This second assembly went in as a unit 36 ft. high extending from the lower chord pin to the top chord. This tall assembly on the pier was guyed in place while bottom chords, diagonals and cross-bracing were added. As fast as the main members of the truss were placed the sway bracing was put in to give the partly completed structure as much lateral stability as possible.

Cantilever erection

Meanwhile all verticals were assembled and the holes for their diagonal bracing were reamed. As the north side span was on a fixed bearing it had only to be weighted down with timbers to function temporarily as a cantilever support for the extra weight of the heavier members of steel as erection progressed outward from the pier. The south side span terminated in an expansion bearing, hence at this end the truss had to be guyed back and also was weighted to increase stability.

The old bridge which was being replaced and which had to be kept open to traffic until the new structure was ready, interfered with placement of steel near the center of the span and made it necessary to rehandle a few steel members.

Two obstacles that the crew encountered in erection were (1) the fact that all bolts had been furnished with square nuts instead of hexagonal nuts, thus precluding the use of standard ratchet wrenches for tightening, and (2) the inaccessibility of some of the holes to be reamed where several members, functioning in planes at right angles, had to be connected. Some such connections required angles attached to gusset plates. When these parts were brought together in the field it developed that there was insufficient clearance to work a reaming tool in some connections and field reaming could be done only after the angles were removed.

Floor construction

After completing the steel erection, the entire erection crew of 26 men was moved to the nearest railroad, 55 miles from the job, to unload three carloads of timber for the floor system (76,000 ft. b.m.) which was trucked to the bridge, framed and painted prior to erection. Floor beams, spanning from truss to truss, are 14x14-in. timbers supporting 8x16-in. stringers on 3-ft. centers. The deck resting on the stringers was built of 2x8's spiked together on edge. As a safety measure, the 2x8's were laid flat on the stringers as soon as the latter were placed and were used as a working platform ahead of the decking job.

As the floor beams were placed the center of each was marked and aligned by transit. Thus any slight variation in the steel was not carried up into the timber deck structure to cause unsightly irregularities in the hand rail. The 8-in. thickness of laminated floor is about 2 in. more than would be required to meet the H-15 loading requirements (using commercial sizes), but this additional depth is considered cheaper in the long run because of decreased maintenance and the gain in stiffness. In these remote regions maintenance may be expensive.

Due to stops to fight forest fires and because of slow delivery of steel, about nine months were consumed in getting in the 176 actual working days which the job required. Change in design of the structure also added to the cost which totaled $33,456. Designs were prepared and construction was carried out under direction of officials of the U. S. Forest Service.

A.W.W.A. Convention at Buffalo

Four-day annual meeting of the American Water Works Association attracted 1200 delegates who participated in sessions devoted to administrative and technical phases of water service improvement

REFLECTING the countrywide stimulation in waterworks activity, the 57th annual convention of the American Water Works Association, held at Buffalo on June 7-10, attracted 1200 members who had an opportunity to hear 50-odd technical papers and see the latest developments in equipment exhibited by 80 manufacturers. Featured on the program were a symposium on water softening, a review of administrative aspects of water conservation and pollution control, and a round-table discussion dealing with the relation of water supplies to intestinal disease epidemics. Special recognition was given to methods of safeguarding water supplies during major catastrophes.

New officers and awards

The following officers were installed for the coming year: president, Eugene F. Dugger, general manager of the Newport News (Va.) water works commission; treasurer, W. W. Brush, editor, *Water Works Engineering*.

New directors chosen to hold office until 1940 were: Marsden C. Smith, Virginia Section; Albert E. Berry, Canadian Section; H. A. Dill, Indiana Section; C. S. Truman, Rocky Mountain Section; Arthur H. Miller, Wisconsin Section; Paul W. Frisk, North Carolina Section; W. T. Chevalier, Water Works Manufacturers Association.

The Water Works Manufacturers Association elected Clinton Inglee, National Water Main Cleaning Co., for president during the coming year. H. W. Forbes of the Pittsburgh-Des Moines Steel Co., was selected as vice-president; Edgar Buttenheim, *American City* magazine, and John A. Kienle, Mathieson Alkali Co., were re-elected treasurer and secretary, respectively.

Presented at the meeting were the John M. Diven medal, and the John M. Goodell prize, both annual awards. The former went to Abel Wolman, chief engineer of the Maryland state department of health, in recognition of his work as chairman of the national Water Resources Committee.

The Goodell prize, a cash award of $50, established by *Engineering News-Record* as a memorial to a former editor of this magazine and the A.W.W.A. *Journal*, was awarded to L. E. Goit and Harry Hayes of the Los Angeles water department, for their paper on pipe coatings.

The Indiana Section of the Association received both the Nicholas S. Hill, Jr. cup and the Franklin Henshaw cup, awards made for membership gains and best attendance records at meetings.

Honorary memberships were conferred on Thomas Brooks, superintendent of domestic distribution, and for 54 years a member of the Los Angeles water department; William W. Brush, retired chief engineer of the New York department of water supply, gas and electricity; Ross L. Dobbin, past president, A.W.W.A., and general manager of the Peterborough, Ont., utilities commission; William J. Orchard, general manager, Wallace & Tiernan Co., Newark, N. J.; and William N. Rapp, for 52 years with the Atlanta, Ga. water department and now serving as superintendent of construction and operation.

National water problems

The complexities of water development and stream pollution abatement administration were outlined in a symposium concerning itself with legislative phases of international, federal and state control measures. J. K. Hoskins, sanitary engineer of the U. S. Public Health Service, reviewed the many avenues of approach to pollution control, citing the boundary treaty of 1889 with Mexico and the 1909 treaty with Canada as examples of international legislative measures in which the federal government has full jurisdiction.

In connection with interstate water pollution problems, Mr. Hoskins called attention to the use of agreements between states and the establishment of compacts. The latter device has thus far been used only by New York, New Jersey and Connecticut, who are combining their efforts to eliminate pollution in the New York harbor region by means of an interstate sanitation commission.

So far as federal participation in interstate pollution abatement is concerned, present laws permit the national government to act only in cases where oil pollution takes place in navigable waters. The Barkley-Vinson bill, however, which would create a federal advisory body and also provide financial aid for pollution abatement, is now before Congress and has already been passed by the House. According to Mr. Hoskins, this bill provides two vital elements essential to furtherance of a nationwide attack on stream pollution, i.e., (1) it will strengthen and coordinate the efforts of state health agencies; and (2) it provides financial aid to initiate desirable projects.

Holding that a court of law is not the place to decide questions of policy regarding interstate waters, Duane A. Minard, member of the law firm of Hobart, Minard & Cooper, Newark, N. J., in a paper discussing the future of water allocation and development, stated that the interests of all could be best served through cooperative action of federal and state agencies. This, he said, might be accomplished with a federal agency, like the National Resources Committee, which would investigate and plan the integrated development of stream uses, cooperating with associations of state commissions which would carry out

specific recommendations in their local territories.

While the states may rightfully assert their independent sovereignty and have the right, under the federal constitution, to negotiate and ratify compacts for interstate purposes, the guidance afforded by a soundly drafted federal program would be of great value in leading the states into intelligent and conservative compacts.

Federalization might possibly be the proper approach to a solution of water development problems, said Willard Chevalier, vice-president, McGraw-Hill Publishing Co., New York, but the mere creation of a federal agency is no guarantee that this will correct all previous administrative deficiencies. More important than the creation of a federal coordinating body is a solution first of such important detail problems as the selection of unbiased personnel in the department, determination of their tenure of office, and the adoption of safeguards against political interference. These "details," said Mr. Chevalier, must first be worked out before a sound program of federal participation can be drafted.

Abel Wolman, chief engineer of the Maryland state health department, and chairman of the federal Water Resources Committee, stated that the problem of national resources conservation was one involving integrated and cooperative action of local units. This means centralization of jurisdiction such as might be provided by a federal bureau working with state commissions as suggested by Mr. Minard. Such an arrangement is analogous to the system now existing in the states wherein state agencies have broad jurisdictional powers over the activities of county, city and other local bodies. In reviewing the work already accomplished by the National Resources Committee, Mr. Wolman presented factual information showing the increased volume of local, state and federal activity in water resources conservation within recent years.

Water softening symposium

Reviewing the development of the lime-soda process of water softening, Charles P. Hoover, chemist of the filtration plant at Columbus, stated that the first municipal softening plant on record was installed at Canterbury, England in the late 70's. On this continent the first softening plant was built at Winnipeg, Canada, in 1901, and the second at Oberlin, Ohio, in 1903.

Improvements in lime-soda water softening practice during the last three decades were listed by Mr. Hoover as follows: Development of mechanical equipment for handling and feeding chemicals; automatic application of chemicals in proportion to flow; use of lime made in rotary kilns which is especially adapted to water softening; abandonment of the use of saturated lime water; better understanding of the optimum points of application of chemicals; the introduction of paddles with controlled speed in place of baffled mixing chambers; mechanical devices for the removal of sludge in sedimentation basins.

Mr. Hoover stated that the pressing problem was to devise a method for removing collodial carbonates quickly; recirculation of lime sludge failed to accomplish this.

Removing colloidal carbonates

Efforts to solve what Mr. Hoover announced as a pressing problem of water softening practice were described by Charles H. Spaulding, superintendent of water purification at Springfield, Ill. He pointed out that while it was well known that collodial carbonates were removed when water passed through sand filters, the filters are limited in their action and too heavy a load will cause encrustation of the sandbed. Upward filtration through sand was considered but this was ruled out at the start because the channels under the bed quickly become encrusted and clogged. This led to using some lighter material held in suspension for the removing medium.

Initial experiments involved first mixing the water with the applied chemicals for a 30-min. period to secure good reaction. The treated water was then permitted to enter at the bottom of a funnel-like sedimentation chamber and flow upward. At the base of the funnel a suspension of calcium carbonate was formed through which the water had to pass. This tended to effect complete removal of calcium carbonate above the saturation point and the upward flow resulted in good clarification.

Further experiments developed the double cone type of sedimentation chamber embodied in the new installation at Springfield. (*ENR*, June 3, 1937, p. 804).

Zeolite softening

In a review of zeolite softening by Sheppard T. Powell, consulting chemical engineer, Baltimore, Md., it was stated that this process has been used in municipal plants for about 8 years. Zeolite softening is somewhat cheaper than other processes for removing non-carbonate hardness.

For regenerating zeoltes about 0.50 lb. of salt is normally required to remove 1000 grains of hardness; with careful manipulation this may be reduced to 0.35 lb.

Based on an analysis of seven zeolite treatment plants, the installation cost averaged $90,000 per million gallons per day capacity; because of one plant this figure is somewhat higher than the normal average of $30,000 to $40,000. Plants will vary in cost depending on the hardness of water treated. Operating costs in these plants range from $2.47 to $8.89 per million gallons of water treated, with an average of $5.59.

A new carbonaceous zeolite that will remove sodium carbonate from water and produce carbonic acid which can be driven off by aeration was mentioned in the discussion by S. C. Applebaum, sanitary engineer of the Permutit. Co., New York. A. S. Behrman, chemical director of the International Filter Co., Chicago, stated that a conservative rating for synthetic-type zeolites was 9,000 grains per cu.ft. of material. Manufacturers, he said, had been at fault in not allowing sufficiently large factors of safety for softening with zeolites.

Water and disease

Puzzling epidemics of gastro-enteric diseases place suspicion on water supplies although little evidence exists to support or disprove such conclusions. To throw further light on the matter, a panel discussion was held from which emerged two schools of thought. One group was of the opinion that our present analytical methods of water examination need revision to include tests that are more sensitive; the other group supported the adequacy of present methods provided tests were properly applied.

Charles R. Cox, New York state department of health, Albany, said that some outbreaks in his state could be correlated with algae decomposition, decayed organic matter and crenothrix destruction in water—in none of these instances were sewage bacteria present. Other cases, however, could not be correlated with the above probable causes and, in fact, the presence of these substances had no ill effects.

Observations in Canada, cited by Dr. A. E. Berry, Ontario department of health, indicated that irritation of the intestinal tract may be caused by certain chemicals in water. He also reported that anabaena growths in a lake caused the death of animals using the water.

Dr. Leland W. Parr, George Washington University, Washington, D. C., urged more careful adherence to the application of standard test methods and pointed out the value of making direct innoculations in the field. Normal bacteria, he said, may pass through successive forms which may change their true identity when feces are stored. More than 25 years ago, stated Dr. Frank Hale, director of laboratories, New York City, it was announced that members of the B. coli group (which includes more than twenty different varieties) might be found outside their regular environment associated with certain diseases.

Much more evidence is needed before present standard methods of water examination are impunged, said George Norcom, consulting sanitary engineer, New York. Faulty results in many cases may be attributed to improper application of procedures outlined.

Dr. John F. Norton, the Upjohn Co., Kalamazoo, Mich., agreed with Mr. Norcom that investigations of water supply should be made immediately when a suspicious disease outbreak occurs but disagreed as to the adequacy of standard methods of examination; these, he said, should include tests that are more sensitive. In the opinion of Abel Wolman, the present tendency is to concentrate on the isolation of specific organisms in water examination without taking into account the related organisms.

Bacterial pollution cannot be correlated with the population resident on a watershed, according to E. Sherman Chase, consulting engineer with Metcalf & Eddy, Boston. The data used in reaching this conclusion was obtained from watershed areas of 1,000 to 40,000 sq. mi. on which the population densities varied from 22 to 81 persons per sq. mi.

Mr. Chase said that no correlation was revealed in his studies; however, he did find that when the size of the drainage area was compared with B. coli counts a relation was indicated, namely, the larger the area the less the number of B. coli. This was attributed to the more effective self-purification that takes place in large streams.

S. A. Greeley, consulting engineer, Chicago, pointed out that a study of this kind could not be conclusive, because average pollution index figures used by Mr. Chase are unreliable due to the many modifying factors in stream analysis. The latter include, among other things; runoff variation, presence of trade wastes, pools in streams, detention periods in sewers and methods of sampling.

Taste and odor control

Experiences with activated carbon in controlling tastes and odors that vary almost hourly in water taken from Lake Michigan were described by J. D. Vaughn, chemist of the Hammond, Ind., filter plant. As much as 515 lb. of carbon per million gallons of water were used in one period early this year. The intake of the Hammond plant is located in a part of the lake where a breakwater and sand shoals are so located as practically to form a stilling basin. Into this area pour large quantites of sewage and trade wastes, the latter particularly high in phenols.

Results from a study of activated carbon involving more than 5,000 comparative tests and 50,000 computations indicated that for conditons at Hammond: (1) the phenol adsorption test was the best basis for evaluating the efficiency of carbon; (2) an increase in the chloramine feed decreased the effect of carbon; and (3) the ability of carbon to remove tastes and odors increased as the tastes and odors increased in the raw water.

Waterworks and floods

A symposium of experiences at water plants during the January, 1937 flood in the Ohio valley included contributions from A. S. Hibbs, water department superintendent, Cincinnati; L. A. Geupel, city engineer, Evansville, Ind.; C. M. Roos, manager, Cairo, Ill., Water Co.; L. S. Vance, general manager, Louisville Water Co., and J. C. Crenshaw, engineer, American Water Works & Electric Co., New York, who spoke on the Huntington, W. Va. water situation.

Certain fundamental considerations which will assist in minimizing hazards from recurring floods may be drawn from these experiences, said L. R. Howson, of Alvord, Burdick & Howson, consulting engineers of Chicago. First, the magnitude of the 1937 flood was unprecedented and rivers rose as much as 10½ ft. in some places above previously recorded highs of the last 200 years. Therefore, the 1884 flood height datum which has been used heretofore in water plant locations should be increased by at least 10 ft.

The conclusions are that protective measures should be provided immediately at waterworks in potential flood areas and should include, among other things: (1) the construction of dikes and walls around all exposed structures; (2) the installation of auxiliary power and other features in pumping stations so that they will be self-contained; (3) doorways and all openings should be equipped with watertight bulkheads; (4) important valves should be placed and referenced so that they can be quickly found when submerged; and (5) sewers and other pipes that might permit entry of flood waters should be equipped with valves.

In discussion, W. W. DeBerard, associate editor, *Engineering News-Record*, Chicago, stressed the need of having an emergency plan worked out on paper prior to disaster, copies of which are easily available to all public officials. Such plans greatly assisted U. S. Public Health and state board of health officials in their early movements when the flood catastrophe occurred.

Charles P. Hoover, chemist of the Columbus filtration plant, in reviewing the extensive investigations underway at his plant in connection with corrosion control, advanced the following hypothesis on which treatment at Columbus is predicated: (1) the higher the pH of water the less corrosive it will be to iron, but more corrosive to zinc; (2) corrosiveness

to iron also depends on the oxygen content of the water; (3) water in chemical balance will not lay down scale in hot water and (4) a highly saturated calcium carbonate water will lay down too much scale, but in an under-saturated condition will cause scale to dissolve.

When lime is added to build up a protective coating where "red water" troubles are encountered, conditions may temporarily become worse, according to I. M. Glace, consulting engineer, Harrisburg, Pa. He reported an experience where tuberculation in the water system caused "red water" and when corrective lime treatment was initiated, the water reaching consumers was temporarily worse than before; this raises a question, said Mr. Glace, whether sloughing of tuberculated iron takes place before a coating forms.

Industrial water treatment

In reviewing coagulation as applied to industrial water, A. P. Black, professor of chemistry, University of Florida, stated that the search for an ideal coagulant, particularly in connection with silica removal, had not yet been entirely successful. Alum and iron compounds have been used as coagulants for many years but the first advance in practice occurred with the introduction of sodium aluminate. The latter is a good coagulant and reduces silica in varying amounts. Bentonite, a colloidal clay, was mentioned as a possible new coagulant offering such advantages as flocculation over a wide pH range, and the use of higher filtration rates because it forms a rapid and abundant floc; unfortunately it is not effective in the removal of silica.

Cross-connection hazards

Numerous new cross-connection hazards are introduced where air conditioning equipment is improperly installed, according to F. M. Dawson and A. A. Kalinske, of the University of Iowa, who presented a paper citing specific instances of faulty practice. Direct connection of condensers with water systems was said to be entirely wrong because this permitted the refrigerants, should a leak develop, to enter the supply main; under certain conditions refrigerants are toxic to the human body. Where surge tanks are used, submerged inlets should be barred to prevent the possibility of back-siphonage; waste water in overflow pipes directly connected with sewers offer similar hazards—a simple remedy is to provide an air gap of at least 4 in. at the end of the pipe.

Water system design precautions and personnel organization to meet major catastrophes was a subject of round-table discussion in which E. A. Munyan, of the Union Gas & Electric Co., Cincinnati, talked on floods; H. E. Halpin, Factory Mutual Fire Insurance Co., Boston, on conflagrations, and N. A. Eckart, water department, San Francisco, on earthquakes.

Silicates aid coagulation

Opening a new field of study in the chemistry of coagulation, John R. Baylis, physical chemist, Bureau of Engineering, Chicago, described experimental work which revealed that silica added to water accelerated coagulation and aided in the production of a better floc. This work also explains why investigators have found differences in the treatment of synthetic and natural waters.

Mr. Baylis stated that the ease of coagulation in natural waters as compared with difficulty in obtaining a satisfactory floc in laboratory comparison studies of water may be attributed to an active form of silica which is present only in natural water. It was found that the addition of 2 to 4 p.p.m. of silica in water before the coagulant (such as alum) was added materially increased the rate of floc formation, size and weight of floc. The silica was added in the form of a specially prepared silicate solution made by partial neutralization of silicate of soda with sulphuric acid. The exact field of application of this procedure has not yet been determined but it is believed that the treatment of some waters may be benefited thereby.

Reservoirs and supply lines

Reviewing reservoir and supply line progress during the past year, L. R. Howson, consulting engineer, Chicago, stated that earth and rock fill dams are now the most favored type. The integrity of the rock fill dam has been increased by the general introduction of a well compacted earth-filled core and the flushing of fine material into the upstream face.

The construction of earth fill dams has been put on a more scientific basis by careful selection and grading of material, by control of moisture, and by the development of improved machinery for compaction.

Notable developments in supply systems have been: (1) the growing use of elevated water tanks, of which there are now 50 in the country with a capacity of more than a million gallons; (2) the use of reinforced and precast concrete pipe for longer lines at higher pressures; and (3) the increased use of steel pipe with bitumastic lining. Hazen-Williams coefficients as high as 130-140 are being allowed for these last. Automatic cone and plug type valves are tending to replace gate valves.

Water purification advances

Reporting on the year's progress in water treatment Paul Hansen, consulting engineer, Chicago, presented statistics indicating that more purification plants have been put under construction or completed during the past year than in any year since the beginning of the depression. One slow sand filter was constructed (at Palmyra, N. Y.), indicating that this type is not entirely obsolete.

Water hammer analysis

A rational analysis of water hammer based on the elastic wave theory of Joukovsky and Allievi is slowly coming into use in this country, replacing the obsolete approximate formulas based on the mechanics of rigid bodies, according to F. Logan Kerr, United Engineers & Constructors, Philadelphia. The theory has been checked experimentally and it can be used both to delimit the range of accuracy of the approximate formulas and in actual design work. Mr. Kerr outlined a graphical method of attack by which it is possible to make a rational analysis of complex systems in a week or ten days—a job which ordinarily might take two or three years by analytic methods.

Corrosion of steel pipe

Russell Barnard, engineer of the American Rolling Mill Co., proposed that steel pipe be designed on the basis of corrosion resistance rather

than tensile strength. He presented an empirical formula derived from studies made by the U. S. Bureau of Standards. According to the formula, the wall thickness in mils should equal: $kT^nF—C/F$. Here k is a constant expressing the corrosiveness of the soil; (this can be obtained from simple field tests of the soil and use of data furnished by the U. S. Bureau of Standards; T is the time in years which the pipe is designed to last; n is the moisture content of the soil; F is a factor of safety varying with the diameter of the pipe; and C is a constant expressing the protective value of the coating, equal to zero for uncoated pipe.

Iron and manganese removal

Design and operating features of an iron and manganese removal plant of high efficiency at Lincoln, Neb., were described in a paper by D. L. Erickson, city engineer of that place, and N. T. Veatch, Jr., of Black & Veatch, consulting engineers, Kansas City. The raw water supply coming from wells has a manganese content of 0.25 to 1.25 p.p.m. and contains from 0.3 to 0.6 p.p.m. of iron. Pilot plant investigations of treatment processes led to the design of a plant which includes aeration, chlorination and upward flow through coke filters, followed by settling and filtration through sand.

The full size plant has performed exactly as indicated by experimental work and removes 95 per cent of the manganese and practically all of the iron. Removal of manganese has consistently improved from a low of 40 per cent when initial operation began, and the filter runs grow longer as time goes on. The amounts of manganese removed in different parts of the process are 35 per cent in the coke filters, 15 per cent in the settling tanks and 45 per cent in the sand filters.

Sand filter bed tests

The measurement of mudballs in the upper layers of sand filter beds may serve as an index of filtering efficiency, according to C. W. Klassen, chief engineer of the Illinois department of health, who described tests made at 40 plants in the state. The method of measuring mudballs was based on a procedure developed by John R. Baylis and consisted of taking four equal samples of sand from the top 6 in. of the bed. The samples are then washed through a 10-mesh sieve to remove the sand and the volume of the mudballs remaining is measured by water displacement. A numerical index is then established, based on the percentage of the volume of mudballs present.

Although Mr. Klassen felt that present data were not sufficient to formulate definite conclusions, he did believe that mudball formation might be correlated with plant operating characteristics. His work thus far indicated that proper coagulation and settling minimizes mudball formation, that proper washing was essential, that washing supplemented with surface agitation had distinct advantages and that prechlorination was an effective safeguard.

John R. Baylis stressed the fact that good settling was a prerequisite in minimizing mudball formation.

Sedimentation theories

Approaching the problem of sedimentation from a mathematical standpoint, Prof. J. J. Slade of Rutgers University, briefly outlined a method of determining sedimentation characteristics through a measure of turbulent velocity. The analysis was based on the fundamental principle of mechanics, that a particle of matter cannot change its velocity in a given direction unless it receives an impulse in that direction; values of settling velocities in individual particles in a non-settled suspension were established by this method. By correlating these values with tank characteristics, it was suggested that definite designs might be evolved.

Lewis V. Carpenter, professor of sanitary engineering, New York University, pointed out in discussion that Professor Slade's work was carried out with granular material only and that the sanitary engineer had to deal with materials of a flocculent nature which changed their hydraulic properties during settling. The multiplicity of factors affecting sedimentation, said Prof. Carpenter, makes it difficult to analyze it mathematically.

Finance and accounting

Meritorious progress has been made by the finance and accounting division in the preparation of a waterworks accounting manual in cooperation with the Municipal Finance Officers Association of the United States and Canada. Charles G. Sweeney, chief of technical staff for the Accounting Manual Joint Committee, stated that the manual, when completed, would form a basis for the correction of accounting deficiencies in waterworks management. One of the first steps taken in the development of the manual has been the preparation of a glossary of terms, so that standard definitions would eliminate much of the confusion that heretofore has existed.

Carl H. Chatters, executive director of the Finance Officers Association, stated that the proposed manual would be generally applicable to water plants in cities of 5,000 to 100,000 population. The manual will be designed so that waterworks accountants generally may be able to see better how the accounting system works, how to take it apart, and how to put it together so that it will function smoothly.

How an internal audit and control protects employees as well as the assets of the owner, city or private company, was brought out by Paul V. Williams, certified public accountant, who has been setting up such a system in Detroit. "Surprise" audits, checks of meter readings, cash handling, special charge entries, banking, segregation of duties, purchase methods, payroll procedure, perpetual inventories and routine for salvaged material, were some of the items covered.

H. L. Meites, superintendent of water, Chicago, in a paper on building and retaining good will, indicated that internal good will was as important an asset as that of the customer. Courtesy is of first consideration. He gave a series of courtesy rules promulgated in a collection office and showed slides of illustrative material used to educate customers on the advantages of meters and the seriousness of leaks.

Thad M. Erwin, water sales agent of the Los Angeles water and power department, described the diversified activities of that city's water sales division, which has 17 branch offices where bills may be paid and applications for new services made. Duties of this division include public relations activities by which arrangements can be made for speakers, ex-

hibitions, motion pictures, etc. Cooperation with the city planning department is effected before extending mains into new subdivisions. Discussion brought out that not only were higher rates legally justified for customers just outside the city limits but agreements provided that water could be shut off if it were needed inside the city.

Licensing operators

In a session devoted to the status of licensing waterworks employees, Lewis V. Carpenter, chairman of the committee on waterworks short schools and licensing, reported that the directors of the A.W.W.A. had passed a resolution endorsing forms of regulation of purification plant operators. This was recommended as a means of preventing the employment of incompetent personnel and assuring some continuity of employment of efficient personnel. At the present time licensing exists in some form in 9 states.

Voluntary certification of operators is urged upon local sections of the A.W.W.A. as a preliminary step toward the adoption of licensing laws in places where they did not exist. The voluntary licensing scheme has proved highly successful in some states, notably in Texas. The California and South Carolina Sections are certifying operators who make voluntary applications.

Experiences in licensing were described by E. D. Rich, director of engineering, Michigan state department of health, V. M. Ehlers, chief engineer, Texas state department of health, Ray F. Goudey, sanitary engineer, Los Angeles department of water and power, and Charles H. Capen, engineer, North Jersey district water supply commission.

Retirement and pensioning of waterworks employees were discussed by Dale Maffitt, general manager, Des Moines waterworks, and Leon A. Smith, superintendent of Madison, Wisc. waterworks.

Los Angeles aqueduct

Highlights of 25 years operation of the Los Angeles aqueduct were reviewed by J. E. Phillips, engineer of maintenance and operation, who paid tribute to the designer of this notable structure, the late William Mulholland. The importance of a dependable water supply for Los Angeles, which receives only 15 inches of rain per year, is intensified by the fact that the city is surrounded on three sides by desert and on the fourth side by the Pacific Ocean. The aqueduct brings water from the Owens river, 250 miles north of Los Angeles on the east slope of the Sierra-Nevada mountains. The structures include open lined and unlined canals, covered conduits, tunnels and riveted steel pipe siphons.

Experience over a number of years has shown that due to maintenance and inspection requirements, the aqueduct is out of service about 10 per cent of the time, i.e., 30 to 40 days per year. Cloudbursts are one of the principal causes of maintenance trouble on the open sections of the aqueduct which are frequently filled with the earth and debris washed down the mountain slopes.

Collapse of one of the 9½-ft. diameter steel siphons occurred in 1913 when a break caused a partial vacuum in the line. The 14-lb. per sq. in. vacuum pressure flattened the pipe which was made of 1¼-in. thick plates. After the break was repaired, the pipe was restored to its original shape merely by putting water back into the deflated section at regular working pressure. After the pipe had rounded into shape, there were few leaks at the riveted joints.

Transite pipe report

Reporting for the committee on transite pipe, C. R. Knowles, superintendent water service, Illinois Central System, Chicago, referred to the May issue of the A.W.W.A. *Journal*, wherein a description of this type of pipe was given along with conclusions of a report made by Underwriters Laboratories.

Transite pipe was described as composed of asbestos fibre and portland cement combined under pressure into a dense and homogeneous structure. Although this type of pipe is not a patented product, the machines on which it is manufactured have been patented by a company in Genoa, Italy, which has licensed 12 companies throughout the world to use their equipment. Production of pipe was begun in Italy in 1913.

The summary of the quoted Underwriters' report stated that "From the conclusions drawn, it will be noted that it is practical to handle and ship the pipe and couplings and install and maintain them in underground piping systems; that systems constructed of them are not subject to rapid deterioration; that the pipe and couplings are capable of withstanding all reasonable stresses to which they are likely to be subjected under ordinary service conditions; that they are reliable in service; that they are uniformly made and can be uniformly assembled."

In discussion, W. D. Moore, American Cast Iron Pipe Co., stated that the report would have been more helpful if a comparison of certain physical properties between cast iron and transite pipe had been included. These, he said, were included in the Underwriters' report quoted above but were not published in the committee report. The comparisons refer to the full length bursting test, the three-edge bearing test, tests when pipe acted as a beam, and bending tests. In all of these, said Mr. Moore, the transite pipe results fell considerably below the values obtained with tests on Class B cast-iron pit-cast pipe. The Association voted that these comparative data be published in an early issue of the *Journal*.

Buffalo waterworks

Pointing out that for many years Buffalo had the dubious distinction of leading all American cities in the consumption of water—the maximum demand ever recorded was 428-gal. per capita per day in 1915—Alan D. Drake, director of water, described the development of the Buffalo waterworks and reported how per capita consumption had now been brought down to 194 g.p.d.

The water system was established 111 years ago when water was conveyed through wood pipe from springs. In 1852 the Niagara river was adopted as a source of supply. Buffalo was one of the first cities (1897) to protect the business district with a high pressure system.

Because of local pollution in the Niagara river, a new intake was built in 1902 in Lake Erie. Water is taken from the lake about 1½ miles offshore and carried through a 12x11½-ft. tunnel to the filter plant. The latter is of the rapid sand type and has a capacity of 160 m.g.d.

FIG. 1. MUCK TAKEN THROUGH THE SHIELD AND LEFT AS BALLAST DURING DRIVING.

Fast Subaqueous Tunnel Driving

New record for shield tunneling set on Lincoln Tunnel at New York through innovations in handling of muck and iron lining, use of mechanical bolt tightener and remarkable coordination of driving operations

All previous speed records in soft ground tunneling were broken in driving the first tube of the Lincoln (Midtown) vehicle tunnel under the Hudson River at New York. Starting in rock at the foot of the Palisades in New Jersey, one shield moved 5,060 ft. across the river to the New York shore in seven months, steadily increasing in speed as ground conditions improved and the sandhogs became more efficient, to an all-time record advance of 1,040 ft. in one month of 25 working days. On the similar Holland Tunnel, a few miles downstream, the highest month's shield advance was 555 ft. After operations became well organized on the Lincoln tube a steady average daily progress of 16 rings of iron, or 40 ft., was made, though on one day the shield advanced 47½ ft. and 45 ft. of iron was placed in 24 hr.; and the next ring was about complete. High daily progress at the Holland Tunnel was 25 ft. An advance of 37½ ft. was recorded in one day in the Pennsylvania R.R. tunnel in 1906.

Several factors made the high driving speed possible. The silt-displacement method was used, by which only a small part of the displaced silt core was admitted to the tunnel and left as ballast, the remainder being pushed aside. Mucking was no problem of driving, therefore, and the shield progress depended upon rate of setting and bolting up the cast-iron lining. To speed up this operation, the contractor devised a hydraulic bolt tightener, probably the greatest contributing factor to the fast driving. Other innovations in the driving included the use of belt conveyors to carry the muck taken into the tunnel beyond a traveling dam back of the shield; a new type of erector-arm gripper that speeded up setting of the iron, and the use of a trolley hoist to transfer the iron segments from cars to within reach of the erector, saving the time usually required to snake the iron from the cars by a chain attached to the erector.

These mechanical improvements in driving methods were of great aid in themselves, but their success was made possible by unusually efficient coordination of all operations. The character of the Hudson River silt permitted working in air pressures of 16 to 18 lb. per sq.in., far below the theoretical hydrostatic balance. Even though the compressed air laws permit working of crews for 8 hr. in such pressure, the contractor elected to use 6-hr. shifts (paid for 8 hr.), which fitted into the 30-hr. week demanded by PWA requirements. The shorter shift resulted in a remarkably high output of labor, another contribution to fast tunneling.

However, all was not easy going. On the New York land section the tunnel lies partly in rock and partly

Fig. 2. Digging muck out of the iron lining pockets was the last step in excavation of the silt entering through the shield. Most of the muck was removed by an electric shovel.

in soft ground, the most difficult combination for shield work. On this section 900 ft. of progress was made in about the same length of time required to advance the New Jersey shield 5,000 ft. Another difficult operation was the sinking of a concrete and steel pneumatic caisson just off the New York shore for a ventilating shaft.

The project

A general description of the Lincoln tunnel project and details of design were published in *ENR* June 17, p. 901. Briefly, the project consists of two two-lane tunnels extending from the vicinity of Tenth Ave. and 39th St., New York City, across the river to Weehawken, N. J. The underwater sections and adjacent land portions are shield-driven, cast-iron lined, 31 ft. outside diameter. Flanking the shield sections at each end are short stretches of tunnel in rock lined with fabricated steel segments, and connecting these sections with the portals are lengths of concrete and steel-bent structures built in cut-and-cover.

Because of the difficulty in financing, the project was started in 1934 with the driving of one tube only, to be used for two-way traffic until a second tube could be financed. The second tunnel was started early in 1937. This article deals only with the driving of the shield section of the first tunnel. Other construction features, including the concrete lining of the first tunnel, will be covered in subsequent articles.

The first tunnel shield section, let under one contract, extends from a construction shaft in Manhattan to the New Jersey ventilation shaft at the foot of Kings Bluff in Weehawken. Included in the contract was the fabrication and sinking of the pneumatic caisson just off the New York shore as the foundation of a ventilating plant building. From the New York construction shaft to the river caisson, 918 ft, the tunnel lies in three types of ground—all rock, part rock and part silt, and all silt. The 5,060-ft. length from the caisson to the New Jersey shaft is mostly in Hudson River silt, except at the extreme west end, where the silt gives way rapidly to solid rock. This western section is partly in silt and rock, partly in solid rock.

The cast-iron lining consists of fourteen standard segments and a key, bolted up into rings 30 in. wide. Taper rings were provided for changes in grade and alignment. Cast-steel segments were used at points of high stress. In the length of the shield tunnel are 2,360 rings, requiring 51,800 tons of iron and steel. A total of 346,000 $1\frac{3}{4}$x$8\frac{1}{4}$-in. high strength bolts, an equal number of nuts and twice as many cut washers and rope grommets were used in assembling the lining.

Two shields were used, one starting at the New York construction shaft, the other at the New Jersey ventilation shaft (Fig. 5.) It was planned that the shields should meet in the river caisson. Thus the New Jersey shield traveled $5\frac{1}{2}$ times as far as did the New York unit in about the same length of time.

West end preparation

The first work the contractor did on the New Jersey side was to sink a small shaft at the site of the ventilation shaft. In connection with this preliminary work considerable excavation was necessary on the jutting bluff of the Palisades at that point. The shaft was sunk to subgrade level, and a tunnel section, full size in rock, was driven 60 ft. westward as part of the contract. Then the heading was turned eastward and the full-size tunnel was driven 55 ft. through rock, and a bottom drift carried out for some distance farther. This work was all conducted from the first shaft without a permanent headframe being installed, a derrick was utilized for hoisting of excavated rock in skips.

The shield was erected at the bottom of the shaft, and was shoved ahead on a concrete cradle for the length of the full-size heading. As the shield progressed it was utilized for erection of the iron lining, which was installed in rock the same as in silt. A bulkhead was built at the portal and compressed air was put on for a short time while the shield entered soft ground at the crown of the tunnel.

Because it was desired to enlarge the ventilation shaft to full size and start the ventilation building foundation at an early date, the tunnel contractor sunk another shaft 300 ft. eastward for construction purposes. A substantial headframe and hoisting equipment was installed at this shaft. Just riverward from the construction shaft was built a heavy concrete bulkhead, 10 ft. thick, in which two muck locks, a man lock and an emergency lock were placed. The tunnel was then again ready for air and resumption of shield driving.

Both shields were identical in design, being of usual construction 31 ft. 8 in. in outside diameter, 18 ft. 10 in. long at the crown and fitted with hydraulic platforms and cast-

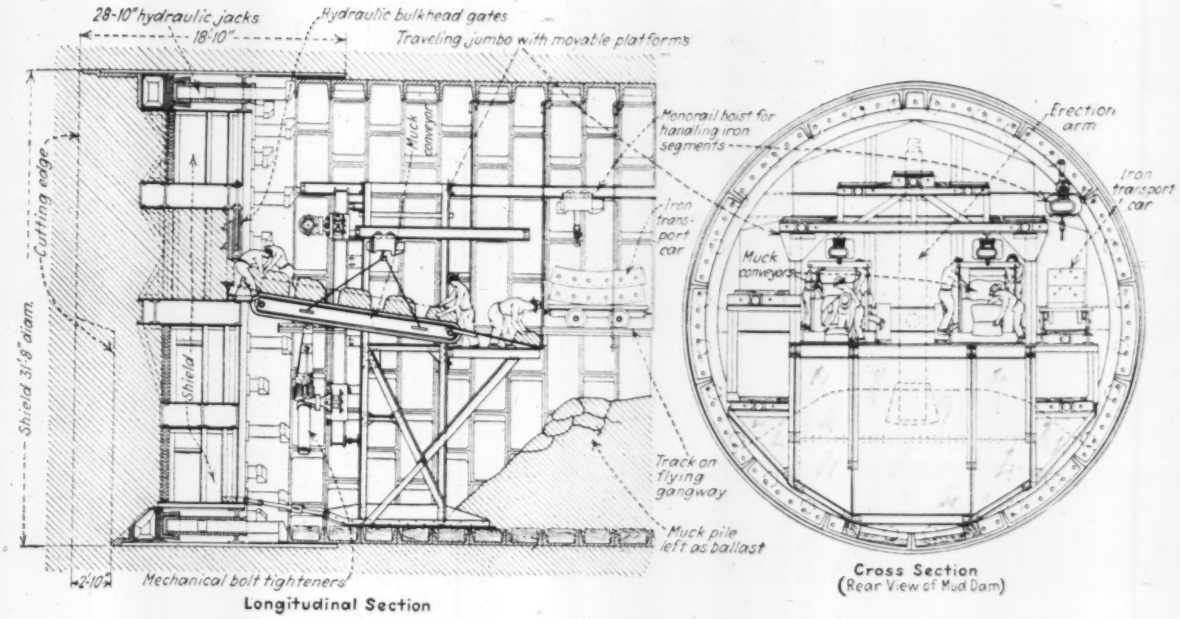


Fig. 3. Speed in shield tunneling was made possible by several mechanical innovations, including a traveling jumbo with moving platforms, a monorail hoist for handling iron, belt conveyors for transfer of muck through the shield, and a hydraulic bolt tightener.

steel cutting edges. Each shield carried 28 10-in. hydraulic jacks, evenly spaced around the circumference. A feature of the shield was special grips on the erector arms that permitted hooking onto and releasing the iron segments in unusually fast time. The shields alone weighed 210 tons each, and their hydraulic equipment an additional 100 tons.

Driving through silt

The New Jersey shield, which did all of the under-water driving through the silt, was fitted with a bulkhead at the face containing two openings 2ft. 4in. square, controlled by hydraulic gates. During a shove the amount of silt admitted to the tunnel was regulated by the size of the gate openings and the time they were kept open.

An auxiliary piece of driving equipment that greatly aided the speed of tunneling was an ingenious traveling jumbo which was dragged along by the shield. It carried nine sliding working platforms, which could be moved backward or forward independently by pneumatic jacks. The platforms were arranged in steps around the tunnel circumference, one at the crown and four on either side.

To conduct the incoming muck beyond the shield chamber, clear of all other operations, two belt conveyors were installed through the jumbo, arranged so they could be extended forward into the shield pockets during a shove, or pulled back out of the way while iron was being set. As the continuous ribbons or prisms of compressed silt flowed onto the belts, the mud was cut into chunks by workmen with wire loops. Upon reaching the rear end of the conveyor the chunks of silt were dumped on the tunnel bottom, and spread to a fairly uniform depth by hand. From 20 to 25 per cent of the displaced silt was admitted to the tunnel, which, in chunk form, filled the tube about one-third full. This was left as ballast to counteract the tendency of the unlined tunnel to float. It was removed after the tunnel had been holed through and the air taken off. A sloping steel plate dam, fastened to the rear of the jumbo, kept the mud out of the working space.

Another interesting feature and a decided improvement in shield tunneling was the method of handling the iron lining. A narrow gage track was laid on a flying gangway hung at the south side about springline, over which the iron was hauled to the heading in trains, two segments to a car. At intervals the track gangway was widened to include a passing track. Hanging from lining bolts high on the arch, directly over the track, was a monorail hoist, its track rail extending the full length of a train of cars carrying segments for a complete ring and well into the shield.

In previous tunnels each segment was snatched off the end car of a train by a chain hooked to the erector arm, dropped into the bottom of the working chamber, and then maneuvered by hand into a position where the erector head could be fastened to the segment. This operation slowed up setting of iron, for the erector was tied up while the iron was unloaded, and the train had to be constantly switched to bring a loaded car next to the shield. The monorail hoist system greatly speeded up handling of the iron, for the entire train remained at the heading until all the iron was unloaded. The hoist picked up the segments, one at a time, high enough to clear the cars and carried them into the tail of the shield, where they were dropped onto the lower curve, sliding to the bottom. Thus the erector was left free for setting purposes only.

Mechanical bolt tightener

The outstanding feature of the job, however, was a mechanical bolt tightener developed by the contractor and used for the first time in shield tunneling. This apparatus consists of a steel channel ring carrying a gear rack, the ring being set normal to the tunnel axis at the front of the traveling jumbo. Four bolt-tightening units operate around the ring, propelled

by air motors. Each unit consists of a swinging arm containing a 5-in. hydro-pneumatic piston with a 5-ft. stroke. The piston is connected to a chain, which, in turn, operates around a sprocket at one end of the arm, the sprocket being directly connected to a swivel head that fits over the nut of the bolt. The other end of the arm acts as a counterweight.

The advantage of the machines is that, in addition to speeding up the tightening of the bolts, they pull them up to the specified minimum stress of 25,000 lb. per sq.in. in one operation. On previous work it was necessary to run the nuts up and give them preliminary tightening by pneumatic wrenches, then follow with long-handled ratchet wrenches for the final tightening.

Speed through coordination

The high speed attained in tunneling under the river resulted from proper coordination of the various mechanical facilities and the development of a fast routine of operations. For example, as the shield neared the end of a shove the bulkhead gates were closed in time to get the conveyors out of the way for setting of iron. Driving reached a maximum speed of 1,040 ft. in one month, highest daily progress was 47½ ft. of shield advance and 45 ft. of iron set.

Cycle of operations

After operations were fully tuned up a steady progress of sixteen rings, or 40 ft. of tunnel, was made each 24 hr., though often 18 rings were set. The sixteen ring schedule meant a shove every 1½ hr. Analysis of the shove cycle at this speed showed the following distribution of time, starting with the completion of a shove: erecting and tightening bottom iron and erecting remainder of ring, 45 min.; tightening of remaining iron, 20 min.; preparing to shove, 10 min.; and shoving ahead 2½ ft., 15 min. There were 35 men in each heading gang.

Successful control of a shield through silt is a matter of experience and judgment. The shield tends to ride high, that is, to drift upwards. To overcome this tendency the shield was tipped downward steeper than the desired down grade from the New Jersey side to mid-river, and was aimed below the theoretical grade on the climb to the New York shore. The control must have been nearly perfect, for upon nearing the river caisson after a mile through the silt, a survey through a 10-in. pipe driven ahead into the caisson showed the shield to be within ⅜ in. of theoretical alignment and ¼ in. from grade.

Another point of interest in driving through the silt was the setting of the iron. The iron was set high on the bottom, wide on the sides and low at the top to the limit of play in the bolt holes. Experience has shown that the outside silt pressure squeezes the tunnel in at the sides and not at the top.

On this and previous tunnels under the Hudson it was observed that shoving the shield "blind" or with a nearly closed face, created a pressure disturbance in the silt in all directions from the heading. This phenomenon was particularly noticeable in the present tunnel near the Jersey shore, where the river bed was heaved upward for some distance. Naturally the question arises as to the possible effect on the first tube if the second tube, only 44 ft. away (out to out) is driven wholly or even partly blind.

In the driving of the adjacent second tube, the Port Authority assumes full responsibility for damage to the first tunnel, provided the contractor follows the engineers' instructions as to amount of silt to be admitted through the shield. To avoid possible objections on the part of the contractor, the new contract contains several unit-price items for excavation based on various amounts of silt actually taken in, though regardless of the amount taken in the contractor receives payment for the entire displacement of silt.

Muck removal

Excavation of the sticky, black mud that had been left in the bottom of the tunnel as temporary ballast was not as difficult as it might seem. After the air had been taken off, a 1-yd. electric crawler shovel started on the muck pile at the New Jersey end. This rig loaded into cars riding on a narrow-gage track which was carried forward on the bottom iron lining. Working with the shovel was a crew of men digging the mud out of the lining pockets. Final clean-up was by hand shoveling and loading, accompanied by flushing of the pockets with a high-pressure water jet.

Sump jacked down from inside

Another innovation introduced by the contractor was in installation of the mid-river drainage sump. On previous tunnels the sumps were built by stepping up the air pressure and excavating the hole by hand, followed by installation of the sump lining.

On this project, however, the lining, consisting of five rings of cast-steel segments 5½ ft. inside diameter, was jacked to place through the opening made by special sections in the bottom tunnel iron. The bottom of the

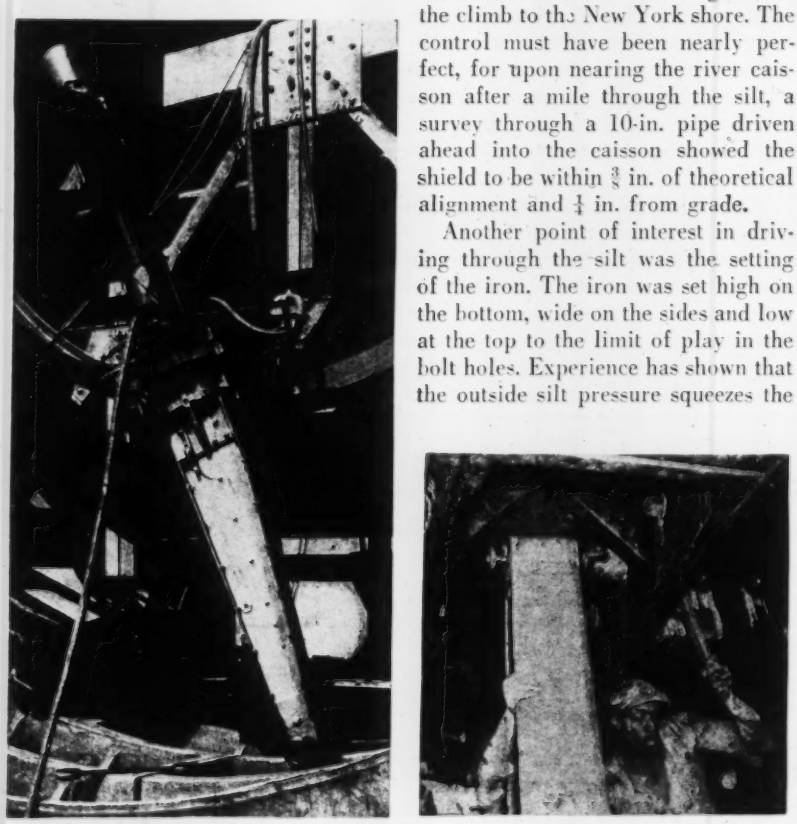


Fig. 4. **The gem of the job was the new mechanical bolt tightener, seen in an experimental setup at the left and in action in the tunnel at the right.**

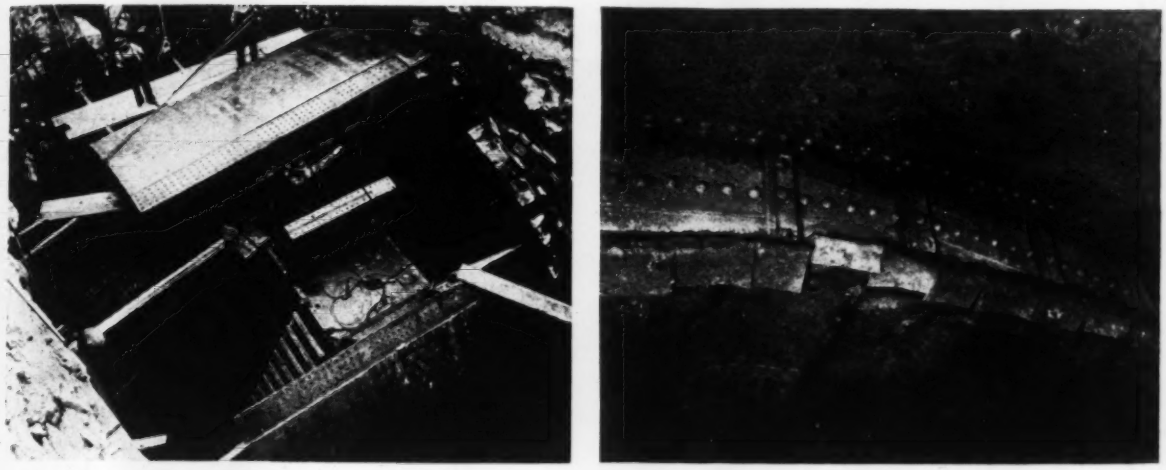


Fig. 5. Start and finish of a mile-long shove through river silt. At the left the river shield is being fabricated at the New Jersey shaft; at the right is a remarkable view of the cutting edge entering the ring girders of the New York caisson.

sump is solid, made up of bolted segments, which fasten to the wall segments. Four hydraulic jacks, bearing against heavy cross-beams fastened to the tunnel walls, forced the sump rings downward one at a time (Fig. 6). The sump lining was built up a ring at a time within the tunnel. This procedure proved remarkably successful.

Shield tunneling in rock

Driving a shield through part rock and part soft ground is about the most difficult of all tunneling operations. Fortunately, on the New Jersey end the rock is hard and self-supporting, and dips sharply toward the river so the transition between full rock and full silt was short.

On the New York side conditions were much worse. The rock, a weak and faulty Manhattan schist, dips generally westward at an easy grade. However, as the surface is very uneven, the tunneling conditions frequently changed in respect to proportion of rock and soft ground at the heading.

Immediately west of the construction shaft the tunnel lies entirely in rock. This stretch, excavated well ahead of the shield, required heavy ground support of steel ribs, timber lagging and considerable rock packing. In one place where the rock surface dipped below top of tunnel, a bottom drift was carried ahead to tap another full-face rock section to permit all possible excavation of rock in normal air ahead of the shield operation.

Much of the New York land tunnel, however, was in mixed rock and soft ground, requiring compressed air. It was a slow, tedious job to work through such material. The rock had to be drilled from the face of the shield, loosened by light blasting and removed by hand. At the same time the soft ground areas at the heading had to be held by local breasting, the hydraulic platforms and trench jacks both being used for bracing.

In this tunnel the muck haulage tracks were kept on the floor, and a portable belt conveyor was utilized to some extent in loading the cars. Yet most of the operations were hand work in marked contrast to the highly-mechanized work in the New Jersey heading.

Caisson sinking

The lower third of the steel caisson for the ventilation building, 53x85 ft. in plan, was fabricated elsewhere and floated to the site. When the base had been set to correct position, sinking was started by building up the outside steel work and placing of a 6-ft. inner concrete wall. Ultimately the caisson was built up to its full height of 100 ft. Sinking was difficult because of many obstructions in the river bed, but was finally accomplished in five months.

Direction

The Lincoln Tunel is being built by the Port of New York Authority under the general direction of O. H. Ammann, chief engineer, and E. W. Stearns, assistant chief engineer. Ralph Smillie is engineer of design and Chas. S. Gleim is engineer in charge of construction work. Jacob Mechanic was resident engineer on the New Jersey and under-river section; C. L. Crandall was resident on the New York end of the first tube and is now in charge of tunnel sections of the second tube.

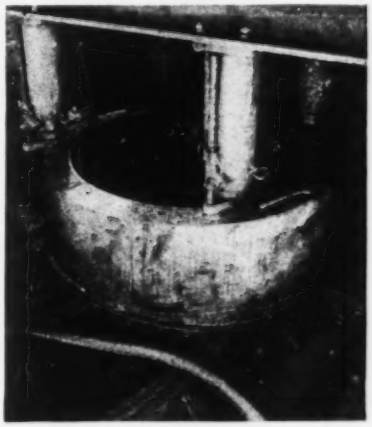


Fig. 6. A neat trick in shield tunneling was jacking the mid-river sump through the bottom lining instead of excavating in advance and placing the sump lining by hand under high air pressure, as has been the custom in the past.

Contract for the shield tunnel was held by the Mason & Hanger Co., New York. Francis Donaldson is consulting engineer for the contractor. Miles I. Killmer was construction manager in charge of the job; H. L. King was chief engineer. George B. Montgomery was general superintendent on the west end; W. R. Ury on the east end.

BOOK NOTES AND REVIEWS

The month's additions to the engineer's reading and reference list

A Photographic Record

A DECADE OF BRIDGES—1926-1936. By Wilbur J. Watson. 125 pp. Published by J. H. Jansen, Cleveland, O. Price $4.50.

The past ten years has witnessed the construction of so many notable bridges that this photographic record of progress, originally intended as a supplement to the author's book "Bridge Architecture", appears also in book form. Each of the pictures is accompanied by a short technical description, including brief appraisal of the artistic merit of the structure. The author's selection of pictures is admirable, his telegraphic descriptions instructive and easy to read. Anyone interested in the bridge building art will find in this book ample evidence that the past decade has been a period of remarkable accomplishment.

Indeterminacy

THE THEORY OF CONTINUOUS STRUCTURES AND ARCHES—By Charles M. Spofford. 267 pp. Published by McGraw-Hill Book Company, New York and London. Price $3.50.

THEORY OF MODERN STEEL STRUCTURES—VOL. II—INDETERMINATE—By Linton E. Grinter. 270 pp. Published by The Macmillan Company, New York. Price $4.50.

These two new books on indeterminate structures and their design and analysis help to fill a gap in a field of engineering knowledge that is as yet not represented by its full complement of literature.

Prof. Spofford's book on Continuous Structures and Arches is born of the wide and rich experience of the author in designing such structures. As a consequence it is planned to conform to the needs of the practicing engineer, and design procedures are presented in detail. About one-third of the book is devoted to continuous girders and trusses, the remainder to arches and frames.

Prof. Grinter's book is of a different type, being more of a treatise on indeterminate methods than a designer's guide. An estimable balance between presentation of elementary principles of analysis and actual design procedure is attained by the author. Both the classical methods of analysis and the more modern ones, based on successive corrections, are given in enough detail that the student can readily judge of their comparative merit. Deflection computations are given a chapter to themselves. The author devotes another chapter to analysis of continuous frames by balancing angle changes, a method he developed several years ago as an alternative to the method of balancing fixed-end moments. Throughout the book emphasis is placed on the use of influence lines in designing all types of bridges, whether statically indeterminate or not. The chapter on continuous, movable and long-span bridges is particularly notable in this respect.

Elementary Surveying

ELEMENTARY SURVEYING—By William Horace Rayner. 380 pp. Published by D. Van Nostrand Co., New York. Price $3.

The author of this text is also one of the authors of that widely used surveying reference book, "Surveying Theory and Practice" by Davis, Foote and Rayner. He is well known for his extensive and thorough studies relating to the subject matter of surveying courses; and in connection with the preparation of this text more than 200 surveying teachers have been consulted. In addition, the author also makes use of his own extensive practice and teaching experience in producing a text that is altogether satisfactory from the pedagogic viewpoint.

The text is primarily designed for students other than those in civil and mining engineering whose course requirements usually do not exceed six semester hours. It thus meets a distinct need that has been expressed for some time by surveying teachers. The fact that this treatise is primarily designed for the so-called "short courses" in no way precludes the possibility of its use for all basic surveying courses. When supplemented by one of several excellent texts available on higher surveying, this book will be valuable for surveying courses primarily offered to civil and mining engineering students.

The engineer and surveyor in practice will find in this text all the fundamentals necessary to the prosecution of routine surveying associated with ordinary construction work. Its brevity and conciseness, without sacrifice of fundamentals, commends it particularly to this group.

In keeping with the increasing importance of these subjects, constant attention is directed to the matter of keeping notes, errors, and the precision of surveying work. Particularly noteworthy is the section pertaining to various legal and practical places of surveying, including a brief description of U. S. Public Land system. Some of the important subjects treated in this chapter are not included in more extensive texts.

The work is adequately illustrated by two hundred and sixty line cuts and half tones. Fourteen tables are given, including all those necessary for ordinary surveying work. Twenty-five field exercises are outlined, illustrating various sections of the text which will be enthusiastically received by surveying teachers.

Elementary Surveying by Rayner is a welcomed addition to an increasing number of better surveying texts. *Reviewed by* PAUL P. RICE, *Instructor in civil engineering, Lafayette College.*

Seaway Opposed

NEW YORK — THE CANAL STATE — By Francis P. Kimball. 105 pp. Published by The Argus Press, Albany, N. Y. Price $1.75.

Here is a book of propaganda against the St. Lawrence Seaway. Though by its title the book would appear to be a record of the canals of New York state and of their relation to the state's development, actually very little space is given to those subjects; only about enough to provide background for the many arguments against building a ship channel in the international section of the St. Law-

rence River that the book contains. The author sees in the St. Lawrence Seaway, the beginning of the decline of New York as the Empire State. "Deepened for ocean shipping, it could snip in two the cords of transportation that link the East and West . . . . . the eastern ports would be relegated to that of local harbors on the Atlantic shelf." The scattered facts that the author presents do not appear to support his argument. Conceivably the opening of Great Lakes to ocean steamships might sound the death knell of the New York Barge Canal, but that it would have very detrimental effect on the state as a whole is not evident.

Cleveland Inventory

REAL PROPERTY INVENTORY of the Cleveland Metropolitan District and Cuyahoga County—By Howard N. Green. Published by the Real Property Inventory of Metropolitan Cleveland, Cleveland, Ohio.

In report No. 8 of the Real Property Inventory, Cleveland once more learns astonishing facts about itself—facts which no other city knows of its affairs with equal certainty. Since 1932, Cleveland has taken this inventory, and this year has expanded its coverage to all of Cuyahoga County. Data are given on population shifts, land use, new construction, vacancies, industry development and types of dwellings, to mention a few of the subjects covered. The result is a report that is unique and exceedingly valuable.

MISCELLANEOUS NOTES ON BOOKLETS AND REPRINTS

MAKING MUNICIPAL REPORTS READABLE. New Jersey Taxpayers Association, Broad Street Bank Building, Trenton, N. J. Arranged from material prepared for the New Hampshire Foundation, Amherst College.

FILTERING MATERIALS for sewage treatment plants is the title of a recent manual of practice issued by the American Society of Civil Engineers. The manual outlines the general bases for determining the relative suitability of materials and media for filters and sets forth the more important items that should be covered by an engineer in specifying the materials. Copies can be obtained by addressing the society at 33 West 39th St., New York, N. Y.; price to members 30c. and to non-members 50c.

THE TENNESSEE VALLEY EXPERIMENT: a reprint of five articles published in *Engineering News-Record* in December 1936. Engineering News-Record, 330 West 42d St., New York. Price 50c.

CITY'S ROLE IN STRIKES: Suggested techniques for municipal officials. Reprinted in pamphlet form from the February and April issues of *Public Management* by the International City Managers Association, Chicago. Price, 50c.

SOCIAL CHARACTERISTICS OF CITIES: A basis for new interpretations of the role of the city in American life. Reprinted from *Public Management* by the International City Managers Association, Chicago. Price, $1.

MOTOR VEHICLE SPEEDS ON CONNECTICUT HIGHWAYS, a study made to determine actual speed of vehicles, bringing up to date studies made by the Connecticut state highway department and the U. S. Bureau of Public Roads in 1924. Speeds ranged from 9 miles per hour to 80 miles per hour. Published by the Committee on Transportation of Yale University, New Haven, Conn.

ECONOMIC AND SOCIAL VALUES OF MOTOR VEHICLES, Highway Users Series No. R12: a revision and consolidation of material originally published under the titles of "Economic Contributions of Highway Transportation" and "The Economic Contribution of the Motor Vehicle." National Highway Users Conference, National Press Bldg., Washington, D. C.

PHYSICAL PROPERTIES OF MATERIALS: strength and related properties of metals and certain other engineering materials, Circular D101 of the National Bureau of Standards has been reprinted by the bureau together with a supplement and can be obtained from the Superintendent of Documents, Washington. Price 40c.

WATER RESOURCES PAPER No. 77, dealing with the surface water supply of Canada, contains the results of investigations made by the Dominion Hydrometric Survey during the years 1932 to 1934, in the provinces of New Brunswick, Nova Scotia and Prince Edward Island. Copies may be obtained free of charge on application to the Comptroller of the Dominion Water and Power Bureau, Ottawa, Canada.

NEW PUBLICATIONS

DRAINAGE AND SANITATION—By E. H. Blake, revised by W. R. Jenkins. Fifth Edition. 563 pp. Published by B. T. Batsford, London. Price 15s.

FIVE PLACE TABLES-DECIMAL SYSTEM—By P. Wijdenes. 168 pp. Published by P. Noorhoff Ltd., Groningen, Holland. Price 2.50 florins.

HOW TO WELD 29 METALS—By Charles H. Jennings. 100 pp. Published by Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Price 50¢.

LAW FOR ENGINEERS AND ARCHITECTS—Second Edition: By Laurence P. Simpson and Essel R. Dillavou. 692 pp. Published by the West Publishing Co., St. Paul, Minn. Price $4.50.

MAN IN A CHEMICAL WORLD—The Service of the Chemical Industry—By A. Cressy Morrison. 292 pp. Published by Charles Scribner's Sons, New York and London. Price $3.

FIFTY-NINTH ANNUAL REPORT OF THE DEPARTMENT OF HEALTH OF THE STATE OF NEW JERSEY—1936. 431 pp. Published by the Department, Trenton, N. J.

THE BUILDING ESTIMATOR'S REFERENCE BOOK and THE VEST POCKET ESTIMATOR—By Frank R. Walker. 1,682 and 220 pp., respectively. Published by the Frank R. Walker Co., Chicago, Ill. Price $10.

REPORT ON PROGRESS OF THE WORKS PROGRAM—MARCH 1937—Prepared by the Staff of the Works Progress Administration. 145 pp. Obtainable from the WPA, Walker-Johnson Bldg., Washington, D. C.

PUBLIC WORKS ENGINEERS' YEARBOOK 1937—Proceedings of the American Society of Municipal Engineers and the International Association of Public Works Officials. 300 pp. Published by the American Public Works Association, Chicago, Ill.

THE WEEK'S EVENTS

Continued from page 933

Hard Coal Code Goes in Effect

The Bituminous Coal Commission makes public the bituminous coal code

Establishing a mechanism for setting minimum prices for coal at the cost of production and defining unfair trade practices, the bituminous coal code went into effect on June 21. The code has been issued, in accordance with the bituminous coal act in 1937, by the National Bituminous Coal Commission which was established under that act.

As a mechanism for the setting of minimum prices for coal, the Commission will organize twenty-three district boards. These boards may contain from three to seventeen members but must have an odd number. One member will be chosen by the labor organization representing the preponderant number of workers in the district, and of the remainder half will be elected by the coal companies in the district adhering to the code voting as units, and the other half by the companies voting in proportion to tonnage output. The Commission will also set up in each district a statistical bureau to which all code members in the district must report contracts for the sale of coal, orders, and cost data.

Minimum Prices

On the basis of the data collected by the statistical bureau, the district boards will draw up schedules of minimum prices, free on board transportation facilities at the mine, for the types of coal produced in the district, including classifications of price variations as to mines, market areas, uses, and seasons. These prices will be set to yield a return per ton for each district equal to the average cost of production in that one of ten "minimum price areas" in which the district lies.

The prices so arrived at will be further modified by the district board to coordinate them with prices in other districts so that in any market in which several districts compete there will be no discrimination as between districts. The price schedules will then be submitted to the Bituminous Coal Commission which may reject or modify them as it deems fit.

Whenever the Commission considers it necessary to establish maximum prices in order to protect the consumer, it will have the power to establish maximum prices in any district. These will be established at a uniform increase above the minimum prices in effect at the time, except that no maximum price will be established at any mine not yielding a fair return.

Unfair Trade Practices

The code further sets up a schedule of practices which shall be considered unfair methods of competition and will constitute violations of the code. Such practices include:

The consignment of unordered coal, except in certain specified instances. Adjustment of claims with purchasers in such a manner as to grant rebates. Prepayment of freight charges. Allowance of any secret rebates. Predating or post-dating of any invoice or contract. Purchase of business by concessions, gifts or bribes. Misrepresentation of any facts about coal dealt in. Unauthorized use of trade marks or advertising matter of a competitor. Selling through any jobber or sales agency which is actually an agent of any retailer or coal consumer whereby the retailer or consumer obtains a rebate; exception is made to this in the case of farmers cooperatives.

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Illinois Bill Proposes 10,000 Small Dams

A bill introduced into the Illinois state legislature would transform the prairie into a lake wonderland by the construction of 10,000 to 15,000 small dams. The main purpose of the plan, conceived by Lt.-Col. M. O. Kasson, retired army officer, is to conserve the water of the spring flood season for the benefit of the farmers during the summer dry spell and indirectly to lessen flood damage. The dams would be built at the head waters of various Illinois rivers and streams, creating thousands of small lakes which would hold the floodwaters.

The water conservation bill would authorize the appointment of a water commission for Illinois and provide an immediate appropriation of $850,000 to carry on dam construction. There would be yearly appropriations for ten years. The dams could be built, Colonel Kasson estimated, at an average cost of $2,500, using sheet steel piling for core.

Prison Road Work Is Recommended

Prison Industry Board recommends that selected prisoners be used for road construction work

Defying the popular prejudice against the use of prison labor on highways, the Prison Industries Reorganization Board has embodied a qualified but positive endorsement of this practice in a routine interim report. The Prison Industries Reorganization Board is a federal agency which advises state prisor authorities on the difficult problem of keeping prisoners usefully occupied without competing with industry.

The statement is phrased in very careful language and cannot be construed as an endorsement of bullet and bloodhound penal methods. It states that "The Board is convinced that there is an extensive opportunity for the wise and constructive use of prisoners of the better type on highway work and on conservation work such as forestry, drainage and soil erosion projects."

The qualifying adjectives in this statement are important. The Board does not favor wholesale turning out of prisoners into the highways but rather a judicious process of selection that will benefit the state and the men.

The idea is already in use to some extent. California is now using more than 500 convicts on highway improvements with excellent results. The men are granted special privileges, not the least of which is a daily wage that permits the accumulation of a substantial liberty fund payable upon release. Selection of men is based upon good conduct and obedience to discipline as well as upon physical fitness, and conditions in the field are regulated to provide substantial food, comfortable quarters and practical elimination of public degradation—a factor which has provided one of the most powerful arguments against the traditional chain gang.

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Reclamation Reservoirs Hold Large Supply

Ample water supply for 3,000,000 irrigated acres is now available in the various reservoirs of the Bureau of Reclamation irrigation projects in the West. "Prospects are bright for the reclamation projects," John C. Page, commissioner of reclamation, reported to Secretary of Interior Ickes. "With the increase in storage expected during May and June, all projects with the exception of two will be provided with ample water for the coming irrigation season."

WORLD'S FAIR TEST BUILDING RESEMBLES JOSEPH'S COAT

BLOCKED AND PATCHED with multi-hued designs, a unique test building stands conspicuously on the vast expanse of land on the reclaimed Flushing Meadows that will be the site of the 1939 New York World's Fair. This unique building, whose walls can be made to twist, heave, buckle, sag or otherwise contort at the will of the testing engineer, is a practical laboratory where the merit of various heights of wall coating and different stucco treatments are tried out. Inside the 40 x 60-ft. structure is a complete testing laboratory for further analysis of materials proposed for interiors and exteriors of the 300 proposed buildings. Ground consolidation, wind pressure, fire resistance, stucco layering, weather tightness, stud spacing, paint acceptance, insulation, light refraction, illumination possibilities, ceiling heights, flexibility of material, and economies consistent with temporary building, are a few of the factors governing research as carried on within and without the test building. The building code of the Fair Corporation is, in part, responsible for institution of the test building, since it provides that all walls in all exposition buildings must have at least ½-hr. fire resistance.

The flexibility of the walls, which provide a rigorous test for stability of materials under stress, is controlled by a lattice-work of adjustable steel rods. The foundations are adjustable to provide an artificial ground settlement.

Desert Concreting Halted On Colorado Aqueduct

With 221 miles of main line aqueduct completed, the Metropolitan Water District of Southern California on June 5 suspended open work concreting operations for the summer months on the desert section of the waterway. Temperatures rising above 100 deg. made it necessary to defer the concreting work until fall. Less than 10 miles of conduit and siphons remain to be constructed on the main aqueduct, from the Colorado River to the Cajalco reservoir near Riverside, Calif. With the exception of the conduit, all open work on the main line of the aqueduct is now completed.

Coachella concrete finished

Concreting work on the 18 mi. East Coachella tunnel, longest on the aqueduct, was completed May 27 when the last concrete was placed in the lining. The tunnel has a lined diameter of 16 ft. and is 96,605 ft. long. It is one of a group of ten tunnels north of the Coachella valley with a total length of 34 miles. Work on this group of tunnels has been under way, as a force account project, since December, 1932. It was the first construction to be started on the 392 mile Colorado aqueduct.

Progress on tunnels

In addition to the Coachella group of tunnels just completed, the aqueduct has 28 other tunnels with a total length, for all tunnels, of 108 miles. At the present time more than 103 miles of these have been excavated and more than 92 miles have been lined with concrete and completed.

The acqueduct is now 62 per cent complete, and, based on the present rate of construction progress, it is estimated that the project will be put into operation in 1939.

Pennsylvania Cities' Water Supply

Pennsylvania legislature opens way for Pittsburgh water but refuses approval to Philadelphia plan

Two Pennsylvania cities which have sought from the legislature powers to enable them to improve their water supply systems have met with varying fates.

The plan proposed by Mayor Scully of Pittsburgh for a new $70,000,000 water supply system for that city and the surrounding communities met the approval of the legislature, and bills were passed giving the city the right of eminent domain to acquire property outside its limits for constructing the system and empowering it to issue non-debt revenue bonds for financing the project.

The mayor has announced that additional data is needed before final designs can be made. He expects to apply for a PWA loan for part of the money and have the city issue about $60,000,000 in bonds to finance its share.

Mayor Scully's plan includes a proposal to buy the South Pittsburgh Water Co. for $10,000,000 and to purchase some properties of the Pennsylvania Water Co.

Philadelphia Plan Fails

The proposal of Mayor Wilson of Philadelphia (*ENR* April 8, 1937, p. 535) to build a $75,000,000 water system to bring water to the city from the Upper Lehigh Valley and the Pocono Mountain region was not so fortunate.

Legislative bills which would have made the project possible were dropped in committee when it proved impossible to obtain legislative permission for the city to sell power generated in connection with the water project. This was considered necessary to finance the program.

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Fort Peck Dredging Reaches High Mark

All previous daily dredging records at Fort Peck Dam were broken on June 3 when 238,540 cu. yd. of material were pumped into the fill in 24 hr. by the four dredges. This output exceeded the previous high day's record by 2,420 cu. yd.

The dredging plant got off to a good start this year, for though it is still early in the season, the output has hit a stride not reached in previous years until later in the working season. In May a total of 4,814,470 cu. yd. was pumped, 500,000 yd. over last year.

CALENDAR OF MEETINGS

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION, annual meeting, Cambridge, Mass., June 28-July 2.

AMERICAN SOCIETY FOR TESTING MATERIALS, annual meeting, New York City, June 28-July 2.

ROYAL SANITARY INSTITUTE, 48th Congress, Birmingham, England, July 12-17.

SOUTH CAROLINA: examinations for professional engineers and land surveyors, July 13, at the State Office Building in Columbia, S. C.

AMERICAN SOCIETY OF CIVIL ENGINEERS, annual convention, Detroit, Mich., July 21-24.

AMERICAN WATER WORKS ASSOCIATION, Central States Section, Dearborn, Mich., Aug. 18-20; North Carolina Section, Wilmington, N. C., Aug. 26-28.

NEW OFFICERS ELECTED

OFFICERS elected at a recent meeting of the Pacific Northwest Section of the American Water Works Association are: M. H. McGuire, chairman; G. Gilman, vice-chairman; R. E. Koon, and Harold Fowler, trustees. Fred Merryfield was re-elected secretary-treasurer.

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New Professional Groups In New England

The National Society of Professional Engineers has announced the organization of the Rhode Island Society of Professional Engineers and the Massachusetts Society of Professional Engineers. The officers of the Rhode Island Society are: president, John V. Keily; first vice president, John E. Meade; second vice president, Charles W. Stewart; secretary, Charles L. Pool, and treasurer, Edward O. Greene.

The officers of the Massachusetts Society of Professional Engineers are: president, Joseph T. Shea; first vice president, Fred Brown; secretary, Edward C. Brown; treasurer, F. E. Votaw; and national director, Burtis Brown.

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Last Bids Received On PWA Housing

PWA on June 11 opened bids on the last of its 51 housing projects. Low bidder for the construction of superstructures at Parkside project in Detroit was John Griffiths & Son Construction Co. of Chicago, who bid $3,443,000. This represented a saving of $570,000 over the low bid of $4,013,000 received when the bids were rejected.

The Public Works Administration has announced that during the last three months it has effected savings of $2,056,470 on seven housing projects on which the original bids were rejected. At the same time modification of the design on four of these projects increased the total number of dwellings by 207 units.

The projects on which the savings were effected were located in Detroit; Evansville, Ind.; Minneapolis, Nashville; Schenectady, N. Y.; and Washington, D. C. The largest saving was achieved in Detroit where a contract was awarded for the Brewster project at a figure of $803,900 less than the first low offer. A saving of $152,700 was effected in Evansville, along with an enlargement of 53 units, and in Schenectady, the project was increased by 11 units while the contract was let at $145,400 saving.

Quite low rentals have been achieved for Durkeeville, PWA's recently completed $1,000,000 low-rent housing project in Jacksonville, Fla. The rents will average $3.82 per week per apartment, varying from $2.90 for a two-room house to $4.55 for a five-room house. This rental figure includes electric lighting and refrigeration.

The chief reason for the low rental achieved is that, although concrete floor and column construction was necessary to withstand possible hurricanes, the warm climate made it unnecessary to provide for installation of heating equipment.

Four housing projects are now occupied. These are the Techwood Home development in Atlanta; Liberty Square in Miami; William B. Paterson Court, Montgomery, Ala.; University Homes, Atlanta; and Stanley F. Holmes Village in Atlantic City. Techwood Homes opened since last August, is 99.3 per cent leased and the Atlantic City project which opened in April is 92 per cent leased, with applications still coming in.

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Third Bituminous Parley At Glacier Park

The third annual Montana Bituminous Conference will be held this year at Glacier Park, Mont., Sept. 7, 8 and 9. Though young and local in organization, the conference is rapidly assuming a national character, attracting highway engineers interested in bituminous road construction from all parts of the country. It is held primarily for the road engineer and materials technician rather than for officials and administrators. Numerous papers deal with technical problems and bituminous construction experiences.

PERSONAL

C. H. SHEPPARD has been named city engineer of Granite City, Ill.

OLE SINGSTAD, chief engineer of the New York City Tunnel Authority, has received the honorary degree of doctor of engineering from New York University.

GEORGE N. CARTER, formerly state engineer of Idaho, has been appointed resident engineer for the Keystone Dam area by the Central Nebraska Power and Irrigation District.

CAPT. SAMUEL L. DAMON, formerly assistant to the district engineer of the First Portland District, U. S. Engineer Corps, has been appointed district engineer succeeding Col. Fox.

LT. COL. JOHN F. CONKLIN, U. S. Engineers, district engineer of the Huntington, W. Va., district, has been transferred to the Panama Canal Zone, effective about the first of August.

J. S. BURGOYNE, formerly first assistant engineer in the railway and bridge section of the Toronto department of public works, was recently promoted to engineer in charge of that section, succeeding the late Thomas Taylor.

ARCHIE N. CARTER, formerly engineering aide of the U. S. Engineer Corps, recently took a position as junior planter with the Firestone Tire & Rubber Co. of Akron, Ohio, to be stationed at Monrovia, Liberia, West Africa.

MAJOR GEORGE F. NOLD, U. S. Engineers, formerly stationed at Albany, N. Y., has been made district engineer of the newly created Binghamton, N. Y., district. The Binghamton district was formerly part of the First District of the North Atlantic Division.

LAWRENCE C. MERRIAM, formerly regional officer in charge of emergency conservation work activities of the National Park Service in the Pacific States, was recently appointed senior conservationist of the Park Service and acting superintendent of Yosemite National Park.

V. W. ANCKAITIS, administrative assistant for Pennsylvania District 3 of the WPA and formerly with the Pennsylvania department of highways, has resigned from the WPA to take a position as engineer with the Tilghman Moyer Co., architects, engineers and contractors of Allentown, Pa.

EDWARD M. BRICKETT has been appointed engineer in charge of concrete control work by the Boston engineering firm of Thompson & Lichtner Co., Inc. Mr. Brickett was for some time in charge of the research laboratory of

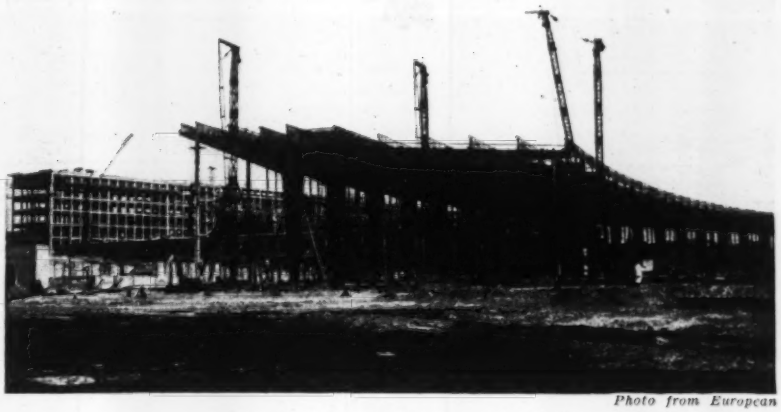

Photo from European

BIG PROJECTS PLANNED IN GERMANY

THE HANGAR framing, office building and (at right) railway tunnel here shown, are part of the Tempelhof Airport, one of a number of large projects now under way or planned in Germany. Other projects for which plans have been announced include an 820-ft. 60-story skyscraper to be erected in Hamburg, Germany, as the regional headquarters for the National Socialist Party. This building, if it is built according to plans, will be the sixth tallest in the world. It is to be flanked by a series of 15-story buildings, built on one side of a mile and a half long drive to be constructed along the Elbe.

Plans have also been announced for a suspension bridge across the Elbe River with a total length of 3,280 ft. and a central span of 1,640 ft.

the Lehigh Portland Cement Co. and has taught at Massachusetts Institute of Technology and the University of Illinois.

WILLIAM R. GILLAM, who has been district engineer for the southern lines of the Illinois Central R. R. for the past several months, has been appointed superintendent of the Iowa division of that line, succeeding the late W. Scott Williams. Before taking his position as district engineer for the southern lines, Mr. Gillam was for six years division engineer in Waterloo, Iowa.

ANTHONY LAMBERT, engineer and contractor, has been named director for the WPA with headquarters at Baton Rouge, La., succeeding J. H. Talbot, who was transferred to the finance division of state WPA headquarters. Mr. Lambert is a graduate of Louisiana State University, has taught at the University, and has been connected at various times with the J. L. Ham Co. of Minden, La., the Louisiana highway commission, the Louisiana Railway & Navigation Co. and the Lambert Construction Co. of Alexandria, La.

BLAKE R. VAN LEER leaves the University of Florida on July 1 to become dean of the consolidated engineering schools of the University of North Carolina and North Carolina State College. Prof. Van Leer went to the University of Florida five years ago, after serving on the American Engineering Council for several years, and became dean of the College of Engineering. The new consolidated engineering college of North Carolina is expected to afford an opportunity to develop an engineering institution of exceptional strength.

CLYDE MAKUTCHAN, research engineer in the Los Angeles building and safety department, has been appointed superintendent of building construction in Los Angeles to fill the vacancy caused by the death of the late J. J. Backus. He has been given the appointment for 60 days, subject to approval by the Civil Service Commission, which will hold a test to create an eligible list for the position; he will take the test. Mr. Makutchan, a graduate of the University of Illinois, has been connected with the city engineering staff since 1921.

W. W. HORNER, consulting engineer, St. Louis, and long active in the field of municipal and sanitary engineering, in the service of the city and in independent and government practice, has been appointed professor of municipal and sanitary engineering at Washington University. Mr. Horner's work will be a full-time assignment, but he has the privilege of continuing his consulting work on problems of major importance. The University's announcement of Mr. Horner's appointment states that such work is believed to be advantageous to the students as a source of inspiration and of practical instruction. The appointment is effective next fall.

OBITUARY

GEORGE BOTTLER, 54, contractor of Spokane, Wash., died in that city on June 7.

HERMAN KEMNA, architect and construction engineer of Butte, Mont., died in that city June 8 at the age of 79. He had been connected with the Great Northern R. R. and W. A. Clark Co.

MAURICE L. CHASE, a civil engineer on the staff of the Metropolitan District Commission of Boston, Mass., died June 11 at the age of 44. He was a graduate of Harvard University.

ALLEN C. AUSTIN, 52, president of the Austin & Taylor Engineering & Construction Co., of Syracuse, N. Y., died there on June 10. Mr. Austin's best known job was the moving of the six story Hotel Truax across the street without interruption to business.

EDWARD S. COBB, consulting structural and mechanical engineer of Los Angeles, Calif., and at one time a faculty member at Rose Polytechnic Institute, died in Whittier, Calif., on June 6 at the age of 79. Mr. Cobb graduated from Worcester Polytechnic Institute in 1879 and after several years' practice in Boston and a short period of teaching at the Rose Polytechnic Institute he began the practice of consulting engineering in Los Angeles.

PIERRE EDMOND AMIOT, an engineer connected for 33 years with the Canadian department of public works, died in Montreal June 1 at the age of 72. Mr. Amiot was a graduate in civil engineering of L'Ecole des Ponts et Chausses, Paris, in 1886. After his return from Europe, Mr. Amiot practiced in New York city for ten years, and in 1898 returned to Montreal and shortly afterward joined the staff of the federal department of public works. He was district engineer for the department in Chicoutimi and Rimouski.

ROSCOE N. CLARK, for 26 years city engineer of Hartford, Conn., and manager of the Metropolitan District Bureau which embraces the towns surrounding Hartford, died in Hartford June 7 at the age of 66. After graduation from Worcester Polytechnic Institute in 1892, Mr. Clark spent several years working for various engineering firms until, in 1896, he did his first work for the city of Hartford as a topographical engineer on park surveys. He later became chief engineer for the department of public parks and some years later was appointed assistant city engineer. In 1911 he became city engineer.

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

AVERAGE PRICES ON KENTUCKY ROADS, 1934–1937

HIGHWAY contract unit prices showed a 1.5 percent increase for Kentucky state roads for the 12-month period ending March 31, 1937. This change is based on 72 comparable items of which 41 alone reflect the net increase. Comparison is also available for 51 items for the three year period ending March 31, 1937, indicating a 3.9 percent increase for 1935 over 1934 and an 11.0 percent increase for 1936 over 1935. The maximum changes occur in certain sizes of concrete sewer pipe, rock asphalt, structural steel, and lumber. A comparison of these average units are given in the following table furnished by the Kentucky state highway department.

Item	Unit	Ave. Prices for Year Ending Mar. 31, 1935	Mar. 31, 1936	Mar. 31, 1937
1. Clear and grub	acre	$11.254	$14.752	$14.694
2. Remove trees and stumps	each	5.819	5.615	7.885
3. Excav., roadway and drainage, unclass.	c. y.	.322	.336	.346
4. Excav., borrow, unclass.	c. y.	.305	.302	.300
5. Excav., structure, unclass.	c. y.	1.088	1.258	1.607
6. Excav., trench, shoulder	c. y.	.182	.179	.156
7. Remove pipe	l. f.	.328	.339	.361
8. Relay pipe	l. f.	.346	.449	.375
9. Standard catch basins	each	50.556	51.311	.....
10. Scarify and reshape	s. y.	.033	.017	.021
11. Remove sidewalk	s. y.	.184	.121	.202
12. Remove concrete masonry	c. y.	2.608	2.650	2.143
13. Remove stone masonry	c. y.	1.232	1.018	1.745
14. Remove headwalls	each	3.488	5.171	3.292
15. Corr. metal pipe, entrances, 15 in.	l. f.	1.217	1.224	1.224
16. Corr. metal pipe, entrances, 24 in.	l. f.	2.276	2.280	2.331
17. Corr. metal pipe, entrances, 36 in.	l. f.	.....	4.000	.....
18. Vitrified pipe, 12 in.	l. f.	.....	.750	1.043
19. Vitrified pipe, 15 in.	l. f.	1.399	1.000	1.256
20. Vitrified pipe, 24 in.	l. f.	2.385	.....	.....
21. Reinf. conc. pipe, entrances, 15 in.	l. f.	1.102	1.225	1.256
22. Reinf. conc. pipe, entrances, 24 in.	l. f.	2.226	2.529	2.524
23. Vitrified drain pipe, 18 in.	l. f.	1.408	1.504	1.400
24. Vitrified drain pipe, 24 in.	l. f.	2.394	2.583	.....
25. Reinf. conc. drain pipe, 12 in.	l. f.	1.261	1.494	1.130
26. Reinf. conc. drain pipe, 15 in.	l. f.	1.262	1.154	1.953
27. Reinf. conc. drain pipe, 18 in.	l. f.	1.471	1.550	1.314
28. Reinf. conc. drain pipe, 24 in.	l. f.	2.468	2.471	2.149
29. Reinf. conc. drain pipe, 36 in.	l. f.	5.000	4.543	4.520
30. Reinf. conc. drain pipe, 48 in.	l. f.	.....	.....	10.000
31. Reinf. conc. sewer, 8 in.	l. f.	.....	.428	.....
32. Reinf. conc. sewer, 10 in.	l. f.	.....	.505	.....
33. Reinf. conc. sewer, 12 in.	l. f.	.....	1.094	1.000
34. Reinf. conc. sewer, 15 in.	l. f.	.....	1.227	.867
35. Reinf. conc. sewer, 18 in.	l. f.	.....	1.412	2.862
36. Reinf. conc. sewer, 24 in.	l. f.	.....	2.812	3.000
37. Reinf. conc. sewer, 30 in.	l. f.	.....	4.827	4.000
38. Cast iron pipe, 18 in.	l. f.	.....	2.750	.....
39. Cast iron pipe, 24 in.	l. f.	.....	7.500	6.000
40. Concrete, Cl. A	c. y.	15.317	16.480	17.899
41. Concrete, Cl. B	c. y.	14.544	9.913	17.208
42. Concrete, Cl. D	c. y.	36.416	43.930	45.798
43. Stone masonry	c. y.	10.701	10.275	14.705
44. Culvert stone masonry	c. y.	8.070	9.222	12.285
45. Stone paving	s. y.	1.599	1.663	1.000
46. Rip rap	s. y.	1.376	1.898	2.092
47. Reinforcing steel	lb.	.0385	.0395	.040
48. Structural steel	lb.	.0473	.0522	.056
49. Bronze expansion plates	lb.	.297	.324	.328
50. Pile treated lumber	l. f.	.832	.958	.832
51. Pile precast concrete	l. f.	2.739	2.559	2.499
52. Lumber, untreated	M b.m.	.....	45.185	61.543
53. Lumber, treated	M b.m.	107.450	100.332	119.713
54. Crushed limestone	ton	1.577	1.465	1.653
55. Crushed sandstone	ton	1.300	1.650	1.562
56. Coarse aggregate, surface	ton	2.214	1.822	1.988
57. Crushed limestone chips	ton	2.260	1.823	2.142
58. Gravel	ton	.802	.836	.620
59. Rock asphalt	ton	10.940	10.452	12.489
60. Concrete base, paving	s. y.	1.776	1.744	2.000
61. Reinf. conc. paving	s. y.	1.694	1.775	1.988
62. Light oil	gal.	.094	.097	.....
63. Asphalt cutback	gal.	.101	.082	.....
64. Header curb	l. f.	.343	.500	.506
65. Conc. curb and gutter	l. f.	.924	.979	1.086
66. Conc. sidewalk	s. y.	1.552	1.337	1.527
67. Conc. valley gutter	l. f.	1.438	1.662	1.482
68. Asphalt cutback paint coat	s. y.	.020	.....	.034
69. Remove curb and gutter	l. f.	.123	.130	.161
70. Crushed slag	ton	2.370	.....	.....
71. Sheet asphalt binder	ton	7.217	15.950	7.179
72. Topeka mix, No. 4	ton	5.80	.....	.....
73. Rural pipe inlets	each	.....	27.142	25.950
74. Manholes	each	.....	143.839	84.250
75. Manhole frame and cover	each	.....	15.000	20.000
76. Reset manhole tops	each	.....	11.238	6.151
77. Remove stone fence	c. y.	.....	.423	.....
78. Napped sandstone for base	ton	.....	1.750	.....
79. Remove curb inlets	each	.....	7.000	.....
80. Remove catch basins	each	.....	6.170	9.100
81. Asphalt cutback, MC–1	gal.	.....	.088	.092
82. Asphalt cutback, RC–2	gal.	.....	.086	.097
83. Curb, gutter, return inlets	each	.....	32.407	41.195
84. Curb, gutter, box inlets	each	.....	36.492	41.406
85. Cold laid asphalt binder	ton	.....	.....	10.000
86. Remove header curb	l. f.	.....	.....	.150
87. Overhaul	sta. yd.	.....	.....	.020
88. Light tar	gal.	.....	.....	.130
89. Medium tar	gal.	.....	.....	.130
90. Flumes	l. f.	.....	.....	1.500
91. Flume inlets	each	.....	.....	45.000
92. Integral curb	l. f.	.....	.....	.200

CONCRETE SURFACING, WASHINGTON

OWNER: State Highway Department, Washington; L. V. Murrow, Director.

PROJECT: Paving 2.46 miles of double strip concrete roadway, each strip 20 ft. wide, on State Road No. 1, from Olympia to Nisqually, Thurston and Pierce Counties.

BIDS: Seven bids were opened May 18, 1937, ranging from the contract low of $130,064 to a high of $149,782.

CONDITIONS: Completion is scheduled for 120 days after award of contract, with the contractor furnishing all materials and labor required for the work.

LOW BIDDERS:

1. Woodworth & Cornell Inc. Tacoma, Wash. (contract) $130,064
2. Joseph Warter, Tacoma, Wash. 132,082
3. Fiorito Bros. Inc. Seattle, Wash. 138,997

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excav. unclass.	22,680 c. y.	$0.23	$0.25	$0.18
2. Excav. struct.	160 c. y.	.50	.65	1.00
3. Excav. Cl. D	10 c. y.	.50	.75	1.00
4. Overhaul, sta. yd.	2,510 c. y.	.01	.01	.02
5. Overhaul, mile yd.	2,400 c. y.	.10	.10	.15
6. Slope treatment	200 l. f.	.10	.06	.08
7. Finish roadway	1.299	8.00	6.00	8.00
8. Selected roadway borrow	8,660 c. y.	.10	.38	.40
9. Shoulder material	4,330 c. y.	.30	.38	.40
10. Conc. pavt.-std.	34,981 s. y.	1.54	1.59	1.65
11. Conc. pavt, early set	3,858 s. y.	1.71	1.78	1.85
12. Pavement header, No. 3	720 l. f.	.40	.40	.60
13. Pavt. header, des. A	56 l. f.	.35	.50	.40
14. Pavt. header, des. B	516 l. f.	.30	.50	.40
15. Reinf. conc. gutter	18,998 l. f.	.50	.46	.53
16. Pavt. reinforcing, type 2	29,870 lb.	.05	.055	.05
17. Temp. bridge	8 each	20.00	25.00	30.00
18. Cable guard rail	14,743 l. f.	.55	.48	.60
19. Place conc. guard posts	72 each	1.00	2.50	.50
20. Conc. block manhole	1 each	60.00	60.00	65.00
21. Catch basin, des. A	2 each	40.00	60.00	65.00
22. Catch basin, des. B	1 each	30.00	60.00	65.00
23. Catch basin, des. C	3 each	20.00	50.00	65.00
24. Open wood flume	323 l. f.	.60	.65	1.75
25. Adjust manhole	5 each	5.00	2.00	5.00
26. Adjust catch basin	10 each	5.00	2.00	5.00
27. Remove conc. pavt.	1,535 s. y.	.25	.30	.40
28. Remove conc. gutter	725 l. f.	.05	.10	.05
29. Remove timber headers	490 l. f.	.10	.10	.30
30. Remove timber guard rail	409 l. f.	.05	.10	.10
31. Remove conc. catch basin	1 each	2.00	2.50	5.00
32. Remove wood catch basin	L. S.			
33. Remove open wood flume	46 l. f.	.10	.15	.05
34. Remove wood gutter	5,307 l. f.	.05	.10	.05
35. Reset timber guard rail	180 l. f.	.25	.25	.25
36. Reset wood flume	125 l. f.	.25	.25	1.00
37. Place conc. sewer pipe, 8 in.	144 l. f.	.35	.40	.50
38. Place conc. pipe, 12 in.	115 l. f.	.75	.70	.85
39. Place conc. pipe, 18 in.	126 l. f.	1.40	1.25	1.50
40. Std. reinf. conc. pipe, 18 in.	72 l. f.	1.75	1.80	1.83
41. Std. reinf. conc. pipe, 24 in.	18 l. f.	3.00	3.00	3.40
42. Dowel bars, caps	9,035 each	.22	.18	.20
43. Dowel bars, only	25,880 each	.18	.14	.16

(*Additional Contract Unit Prices on second following page*)

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Blaw-Knox Traveling Steel Tunnel Forms. Four 70 ft. long sections of these 28 ft. 8 in. forms were furnished for lining the diversion tunnels at the Fort Peck Dam in Montana.

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OFFICES AND REPRESENTATIVES THROUGHOUT THE WORLD

BLAW-KNOX

(Contract Unit Prices continued from page 888)

Item	Quan.	Unit Prices (1)	(2)	(3)
133. Gas connections thru vents	22 each	150.00	100.00	80.00
134. Steel gas pipe, 4 in.	30 l. f.	9.00	9.00	9.00
135. Steel gas pipe, 6 in.	200 l. f.	11.00	11.00	11.00
136. Steel gas pipe, 8 in.	100 l. f.	14.00	14.00	14.00
137. Steel gas pipes, 10 in.	80 l. f.	16.00	16.00	16.00
138. Steel gas pipe, 12 in.	70 l. f.	18.00	18.00	18.00
139. Steel gas pipe, 16 in.	16 l. f.	25.00	25.00	25.00
140. Steel gas pipe, 20 in.	2,400 l. f.	31.00	31.00	31.00
141. Steel gas pipe, 24 in.	15 l. f.	36.00	36.00	36.00
142. Gas by-pass, 6 in.	160 l. f.	15.00	5.00	20.00
143. Gas by-pass, 10 in.	160 l. f.	15.00	7.00	20.00
144. Gas by pass, 20 in.	4,880 l. f.	20.00	14.00	40.00
145. Gas by pass, 24 in.	50 l. f.	25.00	20.00	60.00
146. Gas by pass, 24 in. above st	300 l. f.	15.00	22.00	50.00
147. Cable susp. 16 in. by pass	210 l. f.	60.00	22.00	50.00
148. Maint., support 8 in. mail tube	560 l. f.	10.00	8.00	30.00
149. Curved mail tube, 8 in.	180 l. f.	50.00	2.00	75.00
150. Str., mail tube, 8 in.	380 l. f.	25.00	2.25	30.00
150. Vit. elec. ducts, conduits	56,000 l. f.	.50	.25	1.00
151. Wood elec. ducts, 2½ in.	13,600 l. f.	.50	.30	1.00
152. Wood elec. ducts, 3 in.	70 l. f.	1.00	.40	1.00
153. Fibre elec. ducts, 3½ in.	3,000 l. f.	.60	.40	1.00
154. Fiber elec. duct, 4 in.	450 l. f.	1.25	.50	1.00
155. Maint. s. p. elec. ducts, 2 in	400 l. f.	1.00	.25	1.00
156. Maint. s. p. elec. duct, 2½ in	100 l. f.	1.25	.30	1.00
157. Maint. s. p. elec. ducts, 3 in	9,000 l. f.	1.50	.35	1.00
158. Maint. s. s. elec. duct, 3½ in	2,840 l. f.	2.00	.40	1.00
159. Maint. s. p. elec. duct, 4 in	500 l. f.	3.00	.45	1.00
160. S. p. elec. duct, 1½ in.	20 l. f.	1.00	.50	.45
161. S. p. elec. duct, 2 in.	850 l. f.	1.25	.55	.60
162. S. p. elec. duct, 2½ in.	1,100 l. f.	1.50	.60	.75
163. S. p. elec. duct, 3 in.	5,450 l. f.	2.00	.65	.90
164. S. p. elec. duct, 3½ in.	980 l. f.	2.50	.70	.95
165. S. p. elec. duct, 4 in.	260 l. f.	3.00	.75	1.05
166. Misc. sleeves, elec. ducts	55 ea.	5.00	15.00	25.00
167. Underpinning misc. bldgs. along Sixth Avenue.	Total	500,000	1,036,000	855,959

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Tile — white glazed	8,000 s. f.	$1.50	$1.00	$1.20
2. Tile — weatherproof	1,800 s. f.	2.00	1.25	2.40
3. Tilework, col. enamel	450 s. f.	3.00	1.50	2.50
4. Mosaic tile bands	60 s. f.	5.00	3.00	2.50
5. Ceramic ..le tablets	110 s. f.	5.00	3.00	3.00
6. T. C. faience caps	650 l. f.	2.50	1.00	1.20
7. Mouldings	1,800 l. f.	2.00	1.00	1.20
8. Tablets	50 s. f.	10.00	5.00	2.50
9. Plastering, except for sewers	1,100 s. y.	2.00	1.50	1.60
10. Plastering for sewers	1,050 s. y.	1.50	1.50	1.60
11. Cement work, wainscot, bases	1,250 s. f.	.50	.30	.35
12. Cement work, masonry	1,000 s. f.	.50	.30	.35
13. Floor finish, 1 in.	3,300 s. f.	.25	.25	.35
14. Floor finish, 3 in.	2,700 s. f.	.50	.30	.50
15. Panels	1,600 s. f.	.35	.50	.50
16. Concrete copings, street	170 c. f.	3.00	1.50	2.00
17. Concrete copings	17 c. f.	5.00	2.00	2.00
18. Concrete stairs, self supp.	200 l. f. t.	3.00	2.00	4.50
19. Concrete stairs, supported	1,300 l. f. t.	2.00	2.00	4.50
20. Metal treads	1,100 s. f.	2.50	1.50	4.50
21. Wall strings	300 l. f.	1.00	1.00	1.10
22. Handrails, oak	500 l. f.	3.00	1.00	1.20
23. Platform egdge 14th St.	340 l. f.	1.00	1.00	2.40
24. Slate pipe chambers	120 s. f.	2.00	2.00	1.20
25. Stall partitions	80 s. f.	3.00	2.00	1.20
26. Slate corners, angles	20 l. f.	4.00	2.50	2.40
27. Slate styles, caps	30 s. f.	5.00	3.00	2.40
28. Paint masonry	25,000 s. f.	.15	.10	.06

YAKIMA RIDGE CANAL, WASHINGTON

OWNER: Bureau of Reclamation, Dept. of Interior.
PROJECT: Construction of about 5 miles of canal, including 9,135 lin. ft. of lined section and 700 lin. ft. of bench flume for the Yakima Ridge Canal project, paralleling the Yakima River in Washington. The lined section is of 4 in. concrete, 12 ft. bottom width, with 1¼:1 slope rising about 10.5 ft. The bench flume is 25.5 x 11 ft. overall, with 7 in. to 12 in. concrete sides and bottom. The earth section is 9.5 ft. deep, with 40 ft. bottom width and sides of 1½:1 slope.

BIDS: Eleven proposals were opened at Yakima, Wash. on May 7, 1937, ranging from a low of $175,137 to a high of $246,084.

CONDITIONS: The site of the work is from ½ to 2 miles north of the N.P.R.R. with highways a similar distance. Completion is scheduled for 350 days after contract award with minimum hourly wages stipulated of $1.20 for skilled and 50c. for common labor.

MATERIALS FURNISHED: Government furnishes f. o. b. siding designated, all materials entering into the completed structures, exclusive of backfill, crushed rock for rock paving, inside slope gravel, stone for highway surfacing, and materials not forming a part of the completed work.

LOW BIDDERS:

1. H. J. Adler Const. Co. Caldwell, Idaho..... $175,137
2. J. A. Terteling & Sons, Boise, Ia..... 178,727
3. Northwest Const. Co. Seattle, Wash..... 180,047

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation, canal, com.	445,000 c. y.	$0.125	$0.13	$0.16
2. Excavation, canal, rock	8,000 c. y.	.50	.30	1.00
3. Excavation, core banks	56,500 c. y.	.15	.18	.15
4. Overhaul, sta. yd.	158,000 c. y.	.03	.02	.01
5. Excavation, struct. com.	8,300 c. y.	.35	1.00	.50
6. Excavation, struct. rock	100 c. y.	2.00	1.00	2.50
7. Excav. channels, dikes, com.	1,000 c. y.	.15	.75	.50
8. Excav. channels, dikes, rock	100 c. y.	.60	.75	1.50
9. Compacting embankment	17,500 c. y.	.20	.25	.10
10. Foundation prep., rock	100 s. y.	.50	.60	.60
11. Foundation prep., earth	45,200 s. y.	.35	.30	.10
12. Gravel, blanket, canal slope	1,085 c. y.	1.00	1.00	1.00
13. Backfill	4,000 c. y.	.20	.20	.25
14. Puddle, backfill	2,000 c. y.	.40	.40	.40
15. Concrete, structural	590 c. y.	16.00	16.00	15.00
16. Bench flume concrete	1,065 c. y.	9.80	8.00	10.00
17. Canal lining concrete	5,150 c. y.	7.90	7.50	8.50
18. Set reinforcing steel	600,700 lb.	.015	015	015
19. Dry rock paving	200 s. y.	2.00	1.00	2.00
20. Erect bridge steel	18,400 lb.	.05	.03	.04
21. Erect bridge timber	9 M.b.m.	20.00	20.00	25.00
22. Bituminous bridge surf.	76 s. y.	2.00	2.00	3.00
23. Lay conc. pipe, 12 in.	420 l. f.	.75	1.00	.50
24. Construct underdrain, 6 in.	9,500 l. f.	.50	.75	.20
25. Do. underdrain, cmt. joints	1,900 l. f.	.30	.50	.25
26. Install gates	1,350 lb.	.05	.05	.05

NATIONAL FOREST HIGHWAY, WYOMING

OWNER: U. S. Dept. Agriculture, Bureau of Public Roads, Denver, Colo. J. A. Elliott, dist. engineer.
PROJECT: Grading, draining, gravelling 10.443 miles of Salt Creek—Smoot National Forest Highway, Wyoming National Forest, Lincounty, Wyoming. The work includes about 7 miles of surfacing previous grading. The new grading approximates 6 in. in depth over the 22ft. road width.

BIDS: Seven proposals were opened on May 18, 1937 and ranged from a low of $84,126 to a high of $109,915.

CONDITIONS: Completion is scheduled for 150 days after award of contract with minimum hourly wage rates stipulated of $1.12½ for skilled and 55 c. for common labor.

LOW BIDDERS:

1. J. M. Sumsion, Springville, Utah..... $84,126
2. W. C. Burns, Idaho Falls, Idaho..... 84,692
3. L. A. Young Const. Co. Richfield, Utah..... 89,587

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation, unclass.	55,000 c. y.	$0.495	$0.48	$0.57
2. Excav. struct., unclass.	1,220 c. y.	2.50	2.00	2.50
3. Excav. borrow, unclass.	2,000 c. y.	.35	.40	.30
4. Overhaul (sta. yd.)	50,000 c. y.	.03	.02	.03
5. Gravel base course, 3 in.	14,400 ton	.70	.80	.63
6. Crusher run top course	15,300 ton	.80	.80	.67
7. Supplemental crushed gravel	800 ton	.80	.70	.67
8. Watering	550 unit	3.00	1.50	3.00
9. Roller operation	20 day	24.00	30.00	20.00
10. Furnish roller	1 eac.	400.00	200.00	250.00
11. Furnish water plants	total	300.00	50.00	250.00
12. Concrete, Cl. A	363 c. y.	28.00	30.00	30.00
13. Concrete, Cl. B	46 c. y.	27.00	28.00	30.00
14. Reinforcing steel	36,100 lb.	.075	.07	.10
15. Structural steel	32,500 lb.	.085	.09	.075
16. Untreated timber	0.68 M.B.M.	130.00	100.00	120.00
17. Corr. galv. pipe, 24 in.	954 l. f.	3.50	3.50	3.50
18. Cattle guards, 10 ft.	3 ea.	350.00	800.00	800.00
19. Barbed wire fence	25,700 l. f.	.125	.10	.20
20. Gates	12 ea.	20.00	80.00	20.00
21. Remove, relay old structures	total	110.00	110.00	110.00

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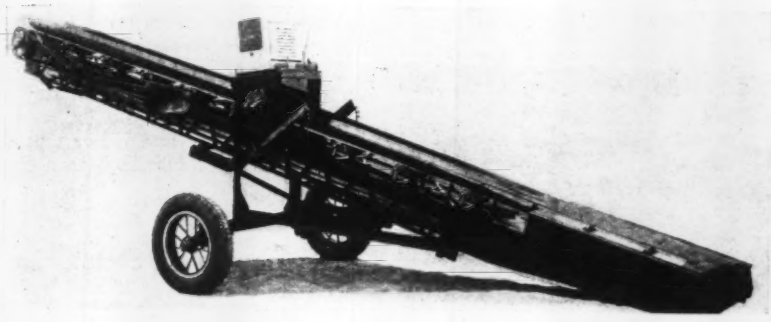
Equipment and material announcements and manufacturers' news

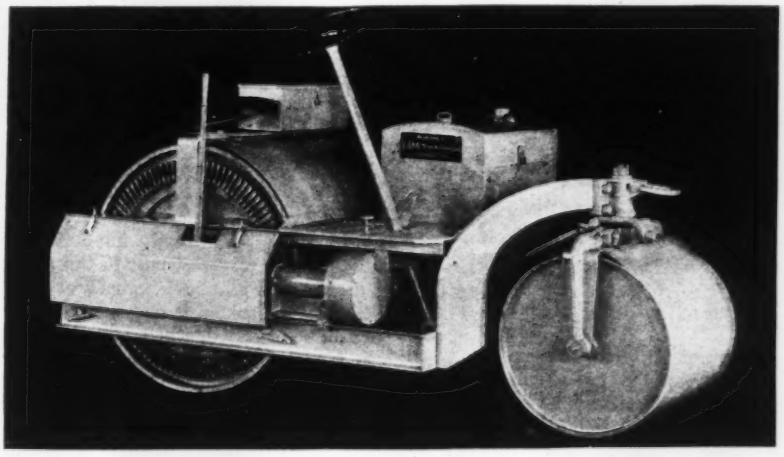


Versatile Belt Conveyor

Intended for the use of contractors and highway builders and designed for maximum versatility and mobility, the new high speed portable conveyor developed by the Atlas Conveyor Co. of Clintonville, Wis., is equipped with high pressure pneumatic truck tires so that it may be towed behind a truck at high speed. This conveyor can handle coal and material yard work, gravel pit work, and highway construction and excavation operations.

The 24-ft. machine has a belt width of 16 in. and a capacity of 25 to 90 tons per hr., depending on the material being handled. Power is furnished by a 3-hp. electric motor or a 3 to 5 hp. gasoline engine. A maximum discharge height of 11 ft. is provided, and the charging height is 13 in.

The machine, with an over-all width of 7 ft. has a weight of about 2,800 lb. with the electric motor or 3,000 lb. with gasoline engine.



Light Utility Roller

The C. H. & E. Manufacturing Co., 3849 North Palmer St., Milwaukee, Wis., has developed a two-ton tandem roller for general light rolling work. The manufacturer suggests its use in such operations as rolling foot paths along highways, bituminous road patching, highway shoulders, sidewalks and driveways.

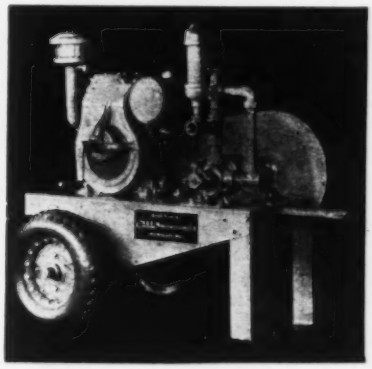
The machine is simply built with one speed forward and one reverse, automotive steering mechanism, foot brake pedal, and foot throttle engine control.

The rear roller is 34 in. wide and 36 in in diameter, and the front roller 24 in. x 24 in. The machine has a shipping weight of 3,000 lb. and gives a compression of 65 lb. per lineal inch with the rear roller empty and 95 lb. with the roller filled. The over-all dimensions are 7 ft. 8 in. by 3 ft. 9 in.

Portable Asphalt Pump

A wheel-mounted pump for handling asphalt emulsions and oils to a capacity of 20 gal. per min. and a maximum pressure of 75 lb. has been developed by the C. H. & E. Manufacturing Co., 3849 North Palmer St., Milwaukee, Wis., for use in treating driveways, widening projects, shoulder redressing work and surface patching jobs.

The machine pumps directly from a drum container through a discharge hose and spray nozzle to distribute an



even layer of material on the surface being treated. The pump is driven by a 2 hp. air-cooled engine through an inclosed V-belt drive.

The pump, with a net weight of 255 lb., is mounted on two 16x4 in. pneumatic rubber-tired wheels.

• • •

Double Roll Crusher

For applications in which head room and weight are important, and in which reductions greater than three-to-one are not required, the Smith Engineering Works, Milwaukee, Wis., has added a roll crusher to its line of gyratory type crushers.

The Telsmith roll crusher is mounted on heavy steel I-beams welded and cross-braced. The crushing members are two steel cylinders with a manganese steel tire mounted on a central hub casting and an expanding conical ring. The shafts are provided with tapered roller bearings, permitting high-speed rotation of the roll without wear upon the shaft.

The rollers are furnished in 30 x 18 or 40 x 22 sizes.

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Prefabricated Timbers

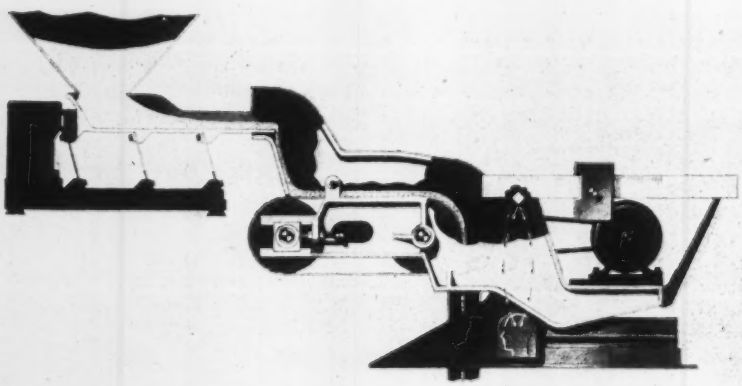
Heavy timber structures, in knocked down form ready for assembly, are being marketed by Western Timber Structures, Inc., 85 Second St., San Francisco, a corporation owned by 25 lumber manufacturers located in Oregon and Washington. These standardized

structures will be marketed through the medium of authorized retail lumber dealers.

The company now has available standard units which including roof trusses, oil derricks, walking-beams, pipe racks, and bridges. The company is prepared to design and erect special structures, but prefers to sell prefabricated timbers ready for erection.

Alloy Steel in Scraper

Decreased weight, it is stated, has been attained in the new 10-yd. hydraulically operated scraper developed by Car Wood Industries, Inc., Detroit, Mich., by means of the use of a high tensile nickel-copper steel, Yoloy, produced by the Youngstown Sheet & Tube Co., Youngstown, Ohio. The weight of the 13.75-ft. machine was reduced from 18,500 to 13,500 lb. This weight reduction is equivalent to two cubic yards of pay dirt. It is claimed that the scraper can dig, haul and spread more than 800 yd. of dirt per 8-hr. day.



Weighing Machine

A new machine for continuous weigh-feeding, proportioning, and batching, called the "Waytrol," has been developed by the Jeffrey Manufacturing Co., Columbus, Ohio. The machine is said to weigh within one per cent accuracy by means of its all-electric, vibrating feed, a synchronous weigh-belt on a scale beam so pivoted as to receive material at the most sensitive end, and an automatic all-electric control.

Feeding and weighing are physically separated processes. An "electric brain" registers any unbalance of the weigh-belt and corrects by speeding up or slowing down the vibrating feeder. For dustless operation and to avoid wind pressure, the entire unit is inclosed in steel and glass. It operates from any standard 60-cycle lighting circuit.

The smallest machine will handle graular material weighing 100 lb. per cu.ft. at a rate that can be varied from several pounds to a maximum of 4,000 lb. per hr.

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High Capacity Compressor

A new line of V-type vertical air compressors intended for construction, tunneling, and mining use in cases where air capacities greater than those obtainable from portable compressors are desired, has been announced by the Sullivan Machinery Co., 307 N. Michigan Ave., Chicago, Ill. The series, known as the WN-102, includes three sizes furnishing 445, 550 and 720 cu.ft. per min. of air respectively.

The compressors have two cylinders, in a V-type design, two-stage and double-acting. They are said to be very compact and can be moved from one job to another on a truck or trailer. Each size is self-contained and requires no water service connections for cooling.

The compressors, which can be used either direct- or belt-connected, are furnished either in complete units, consisting of compressor and power unit on skid-type base or furnished as a compressor only.

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Improved Steam Compressors

Dual cross-head design and tie-rods that keep all piston strains in line with the connecting rod are featured in the improved line of horizontal heavy duty steam-driven compressors, offered by Worthington Pump and Machinery Corp., Harrison, N. J.

Early cut-off, provided by double-piston steam valves with adjustable riding cut-off valves, is said to result in high steam expansion. The point of cut-off can be controlled either manually or by a governor.

All bearing surfaces are force-feed lubricated, and duplicate oil pumping equipment is provided so that each side of the compressor is lubricated independently.

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Laboratory Table Top

"Kemite," a new ceramic material to be used for laboratory table tops, has been developed by the Mellon Institute, Pittsburgh, Pa. It is said to be smooth, hard, strong, practically impervious to liquid, and very resistant to the action of acids and alkalies; because of a low thermal expansion it does not crack or spall, it is stated, when locally heated and cooled rapidly, and it retains its pleasing appearance under severe laboratory conditions.

"Kemite" consists of a moldable ceramic body in which carbonaceous substances have been incorporated.

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New Overlay Material

A new material for producing an overlay or hard facing which is resistant to wear and corrosion, has been developed by Colmony, Inc., Los Nietos, Calif. It consists of a paste contained in collapsible tin tubes. The paste is squeezed out and spread over the surface to be

processed and is then sweat into the surface of the parent metal with a torch or furnace.

The paste is a metallic boride combination, part of which alloys with the parent metal to form a suitable matrix for holding the hard, indestructible metallic boride crystals. The manufacturer states that this facing becomes an actual part of the metal so that it will not chip off and does not interfere with hot or cold forging of the parent metal.

The tubes containing sufficient material to process from one to 2½ sq.ft. of surface, depending upon the thickness of the overlay formed, sell at $2.25 each.

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Reinforced Roofing Tile

Natco Dek-Tile, a product of the National Fireproofing Corp., Pittsburgh, Pa., is a hollow burned-clay roofing tile which is supplied to the job assembled, cemented and bolted together in the form of complete roof sections ready to lay in place on the roof frame. The tile is said to possess high fireproofing and

insulation value and to combine light weight with structural strength.

In construction of Dek-Tile roof, individual units are assembled to a length sufficient to span the distance between purlines. Two ⅜-in. rods are then run through the holes in the tile, the units are mortared together, and nuts on the ends of the rods are tightened after the cement in the joints has had time to harden.

Purlin spacings up to 8 ft. may be used, and at that span the safe load is 66 lb. per sq.ft. The weight of the roof is 13 lb. per sq.ft.

• • •

Lukens Reduces Prices

A new low base price of 25 cents per pound for Inconel-Clad steel has been announced by Lukens Steel Co., Coatesville, Pa. A new list of standard extras was issued at the same time. Inconel-Clad steel is a bi-metal steel plate consisting of a light layer of Inconel bonded to a heavier layer of ordinary steel. Inconel-Clad is said to have a high resistance to corrosion.

Inconel is an alloy of nickel, chromium and iron with a composition of about 80 per cent nickel, 14 per cent chromium and 6 per cent iron.

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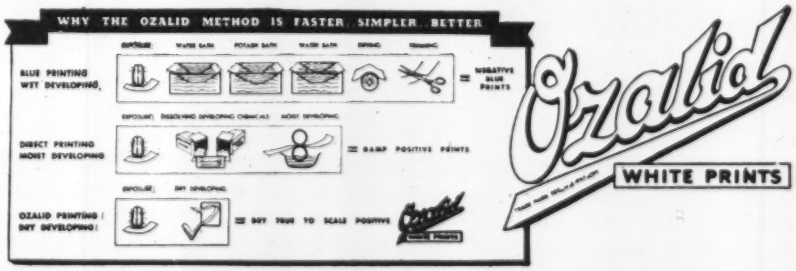

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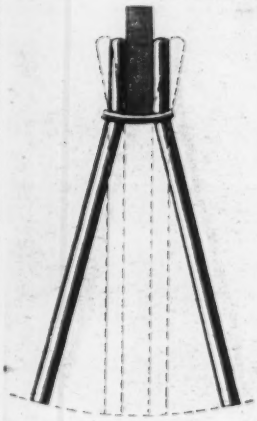

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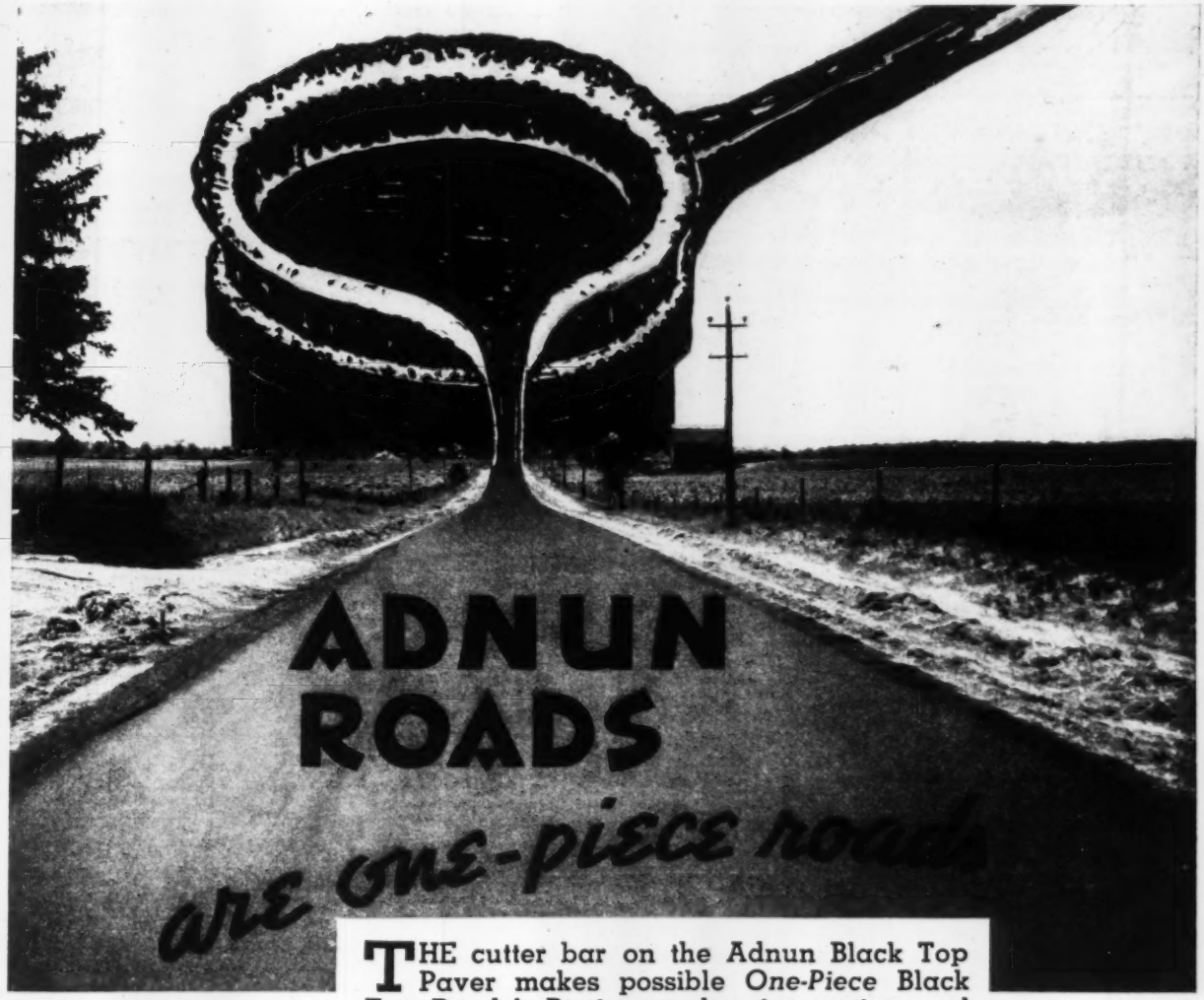

THE cutter bar on the Adnun Black Top Paver makes possible *One-Piece* Black Top Roads! By its overlapping action and crowding pressure, it forces the material against the parallel course or curb, leaving a compact, uniform texture throughout the entire road, and making a positive joint that is practically monolithic, regardless of the number of courses being laid.

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FOR STONE

The Adnun Finish Spreader — a low cost machine that handles any material and shapes crown or bank. Ask about it.

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The Multifoote Paver with all its high speed advantages. There are more MultiFootes in service than any other make.

THE FOOTE CO., INC.
Nunda New York

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TRADE MARK REGISTERED
BLACK TOP PAVER

(Contract Unit Prices continued from page 926)

ASPHALT SURFACING, ARIZONA

OWNER: Arizona State Highway Department.

PROJECT: Grading, draining, asphaltic surfacing of 5½ miles of highway, north from Conche, Ariz.; to be completed November 1937.

BIDS: Twelve bids were opened on May 18, 1937, ranging from the contract low of $70,044 to a high of $111,590.

LOW BIDDERS:

1. Geo. W. Orr, El Paso, Texas (contract)..... $70,044
2. Tiffany Const. Co., Phoenix, Ariz..... 72,345
3. Tanner Const. Co., Phoenix, Ariz..... 72,660

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Roadway excav. unclass...	44,589 c. y.	$0.195	$0.26	$0.25
2. Drainage excav. unclass...	2,430 c. y.	.40	.26	.25
3. Grader ditches.....	12,200 l. f.	.03	.10	.03
4. Structural excav. unclass..	791 c. y.	.70	1.00	1.10
5. Station yard overhaul.....	52,587 c. y.	.01	.03	.02
6. Cubic yard mile haul.....	1,174 c. y.	.20	.30	.20
7. Imported borrow.....	42,766 c. y.	.30	.28	.33
8. Select material.....	19,995 c. y.	.53	.37	.49
9. Base course, sidewalk.....	12,457 ton	.55	.55	.65
10. Stripping pits.....	13,748 c. y.	.10	.15	.13
11. Sprinkling.....	1,575 M. g.	2.25	3.00	1.60
12. Rolling.....	650 hr.	2.50	2.50	2.50
13. Concrete, Cl. A.....	174 c. y.	22.00	20.00	20.00
14. Reinforce steel, bars.....	12,216 lb.	.06	.06	.05
15. Corr. metal pipe, 18 in....	254 l. f.	1.80	3.00	2.00
16. Corr. metal pipe, 24 in....	560 l. f.	2.80	4.00	2.75
17. Corr. metal siphon pipe, 24 in.....	50 l. f.	3.35	4.50	5.00
18. Corr. metal pipe, 36 in....	388 l. f.	5.40	6.00	5.50
19. Reset corr. metal pipe, 24 in.....	10 l. f.	1.50	1.00	1.00
20. Reset cattle guard.....	L. S.	320.00	40.00	50.00
21. Standard line fence.....	56,822 l. f.	.07	.08	.07
22. Standard steel gates.....	7 each	25.00	20.00	20.00
23. Standard wire gates.....	14 each	2.50	15.00	8.00
24. Special steel gates, 4 ft....	6 each	10.00	20.00	10.00
25. Guide posts.....	32 each	2.50	3.00	2.00
26. Markers type A.....	26 each	2.50	3.00	3.00
27. Road oil.....	71,302 gal.	.09	.08	.09
28. Cover coat.....	475 ton	3.00	1.00	2.00

CONNECTICUT RIVER BRIDGE, MASSACHUSETTS

OWNER: Dept. Public Work, Commonwealth of Massachusetts; Geo. H. Delano, chief engineer; Geo. E. Harkness, bridge engineer.

PROJECT: Five span steel deck truss, concrete roadway, 1980 ft. overall length, 30 ft. in width, with 6-ft. sidewalks, over the Connecticut River between the townships of Gill and Montague at Turners Falls, Mass. The deck is 40 ft. above mean high water, with the bottom chord 8 ft. above 1936 flood level.

BIDS: Opened March 16, 1937. Eight proposals submitted with price range from contract low of $860,568 to $974,885. Awarded low bidder on May 10, 1937.

CONDITIONS: Proposed bridge site is below dam, with very little water to affect construction progress. The site is accessible by highway and railroad. Completion is scheduled for June 4, 1938 with minimum hourly wages stipulated at $1.20 for skilled, 75 c. for semi-skilled, and 50 c. for common labor.

MATERIALS FURNISHED: All items required in the construction are to be furnished by the general contractor.

LOW BIDDERS:

1. Daniel O'Connell's Sons, Holyoke, Mass..... $860,568
2. Carlo Bianci & Co., Framingham, Mass..... 864,405
3. Chas. I. Hosmer, Greenfield, Mass..... 865,194

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Road ledge excav.....	800 c. y.	$2.00	$2.50	$2.50
2. Borrow.....	1,300 c. y.	.60	.50	.50
3. Concrete, Cl. D.....	8 c. y.	22.00	20.00	20.00
4. Concrete, Cl. C.....	4,270 c. y.	9.80	14.00	13.00
5. Roadway stone.....	400 c. y.	3.60	3.50	3.00
6. Vit. pipe, 10 in.....	394 l. f.	.50	.50	.60
7. Vit. pipe, 12 in.....	290 l. f.	.60	.60	.70
8. Reinf. conc. pipe, 24 in....	118 l. f.	3.00	3.50	3.25
9. CIW. pipe, 8 in.....	74 l. f.	1.93	1.25	2.50
10. CIC pipe, hvy., 12 in....	56 l. f.	2.44	2.25	2.20
11. Bounds.....	16 each	7.30	6.00	6.00
12. Catch basins.....	10 each	67.00	70.00	70.00
13. Curb inlets, granite.....	6 each	17.00	20.00	16.00
14. Remove trees.....	8 each	20.00	20.00	5.00
15. Gravel borrow.....	3,100 c. y.	.91	.70	.70
16. Sand borrow.....	100 c. y.	1.80	1.50	1.50
17. Strip gravel pits.....	310 c. y.	.12	.20	.20
18. Concrete, Cl. B.....	96 c. y.	61.00	60.00	60.00
19. Concrete, Cl. A.....	4,975 c. y.	16.60	16.50	16.00
20. Granite curbs, 6 x 18 in..	675 l. f.	1.46	1.50	1.35
21. Manholes.....	8 each	67.00	70.00	70.00
22. Lumber sheeting.....	2 M.b.m.	91.00	80.00	20.00
23. Grade, roll, finish.....	5,000 s. y.	.09	.05	.03
24. Steel reinforcing.....	1,055,000 lb.	.045	.04	.049
25. Bitum. waterpfg.....	6,706 s. y.	.24	.25	.30
26. Cable rail, remove, reset...	110 l. f.	.30	.60	.30
27. Curb, remove, reset.....	140 l. f.	.60	.50	.80
28. Granolithic walks.....	40 s. y.	2.25	3.00	3.00
29. Cobble gutter, remove, reset.....	20 s. y.	1.20	1.50	1.00
30. Reset stone, cmt. mortar..	5 c. y.	12.00	15.00	12.00
31. Trench excavation.....	550 c. y.	1.83	1.25	1.20
32. Clear, grub.....	0.6 ac.	200.00	150.00	240.00
33. Adjust manholes, etc.....	1 each	18.00	25.00	10.00
34. Trench ledge excav.....	550 c. y.	1.83	1.25	1.20
35. Curv. granite curb, 6 x 18 in.....	565 l. f.	1.95	2.25	1.75
36. Granite curb corners.....	2 each	8.00	20.00	10.00
37. Curb corner, remove, reset.	1 each	6.00	3.00	5.00
38. Curv. gran. curb inlets....	2 each	21.00	25.00	18.00
39. Catch basin frames, grates.	2 each	22.00	20.00	20.00
40. Traffic signal duct.....	370 l. f.	1.20	.70	.50
41. Pea stone, drives.....	10 ton	1.80	3.00	2.50
42. Cable guard rail.....	200 l. f.	.18	.20	.20
43. Cable rail, 2 str. steel, mult. 6 st.....	250 l. f.	1.10	1.50	1.10
44. End anchor guard.....	1 each	24.00	50.00	22.00
45. Lawn sodding.....	800 s. y.	1.10	1.00	1.00
46. Field sodding.....	500 s. y.	1.10	1.00	1.00
47. Bridge excav. below 110..	50 c. y.	2.70	3.00	1.00
48. Bridge excav. from 110 to 120.....	100 c. y.	2.70	2.50	2.00
49. Bridge excav. from 120 to 130.....	190 c. y.	2.70	2.00	2.00
50. Bridge excav. above 130..	1,990 c. y.	2.70	2.50	4.00
51. Cofferdam.....	total	5,000.00	5,000.00	4,000.00
52. Concrete excavation.....	12 c. y.	50.00	7.00	20.00
53. Copper gutter.....	1,250 lb.	.60	.75	.60
54. Carbon steel.....	5,040,000 lb.	.072	.076	.074
55. Silicon steel.....	2,175,000 lb.	.0759	.077	.0775
56. Light iron work.....	25,000 lb.	.18	.20	.20
57. Welded steel fence.....	3,175 l. f.	6.50	7.00	7.00
58. Aluminum shields.....	500 lb.	.34	1.00	1.10
59. Remove fossil specimens...	500 s. f.	.60	1.00	0.10
60. Quarry granite masonry...	488 c. y.	58.00	50.00	49.00
61. Four cut granite masonry.	1,196 s. f.	4.50	4.00	4.50
62. Cap stones.....	376 s. f.	5.00	4.50	4.00
63. Conc. marker strips.....	1,100 l. f.	1.00	.30	.50
64. Scuppers.....	34 each	15.00	25.00	15.00
65. C. I. pipe, 6 in.....	1,750 l. f.	1.50	1.50	1.50
66. Kalamein door, frame.....	1 each	256.00	250.00	100.00
67. Curb lamp posts.....	15 each	244.00	200.00	190.00
68. End post lamp standard...	4 each	390.00	210.00	200.00
69. Korduct, 4 in.....	13,632 l. f.	.37	.20	.20
70. W. I. pipe conduit, 4 in..	368 l. f.	1.35	1.50	1.50
71. Bronze sleeves, 5 in.....	102 l. f.	3.90	4.00	3.50
72. Models, waste moulds.....	total	975.00	1,200.00	900.00
73. Bronze lanterns, curb stds.	15 each	318.00	175.00	170.00
74. Bronze lanterns, end posts.	4 each	390.00	265.00	250.00
75. Electrical equipment.....	total	5,150.00	4,500.00	4,000.00
76. Remove, alter bldgs.....	total	610.00	1,500.00	1,000.00
77. Bitum. conc. bridge surface	702 ton	10.65	8.50	9.50
78. Bitum. conc. sidewalk surface.....	10 ton	11.00	8.50	10.00
79. Macadam broken stone...	310 c. y.	3.85	4.50	3.70
80. Bitum. asphalt surface....	10,800 gs.	.14	.15	.13
81. Mac. sidewalk stone.....	10 c. y.	4.15	4.50	4.00
82. Bit. asphalt sidewalk surface.....	300 ga.	.16	.15	.20

Five-span deck truss bridge over Connecticut River, Turners Falls, Mass.

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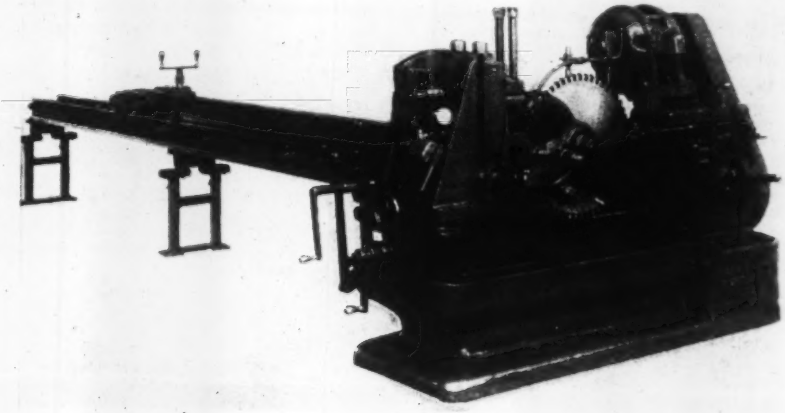
Equipment and material announcements and manufacturers' news



Bar Cutting Apparatus

The Cochrane-Bly Co., of Rochester, N. Y., has developed special handling apparatus for sawing square and rectangular bars. It will grip the bundle of bars on the end and feed it all the way up to the saw blade. As applied to their No. 55 sawing machine, here illustrated, the fixtures are designed to hold forty ¼-in. x 2-in., or twenty ½-in. x 2-in., cold-drawn bars. The bars are supported on rolls and held in the extended carriage reaching over the bed of the saw up to the saw blade. The stock carried is pushed forward by a chain and sprocket operated by a tank handle. An air-operated vise working through a compound toggle link grips the bars and clamps them laterally.

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Concrete Tying Devices

The Richmond Screw Anchor Co., Inc., Smith and Bush Sts., Brooklyn, N. Y., has developed four new devices for tying concrete forms. Their Tilt Lock Clamp is said to be an unusually safe device for clamping up forms to tie rods. The ¾ in. tie rod with ⅞ in. threads, five to the inch, is upset to a rectangular section at the outer end. The clamp handle, a malleable casting 4¼ in. in diameter, is so designed that the first of the upper half of its threads is a half inch beyond the last thread of the lower half. When slightly tilted, the clamp slides along the rod until it touches the form wale, where it is seated. From this point, three complete turns of the tie rod brings it tightly against the wale. Safety is said to be assured by the fact that it takes three full turns backward before the clamp can be unseated from the threads. A rectangular hole in the clamp handle permits an extra handle to be used as a wrench in tightening up the form.

Two additions have been made to the Richmond Company's line of Tyscrus (tie rods welded at each end to the side of a coil of wire twisted up to form a screw thread). The Water-Seal Tyscrus are made with 1/16 x 11/16 in. washers swedged to each strut of the regular ½ in. Tyscru. These washers break the surface continuity of the tie rods within the concrete wall and are said to prevent any seepage of moisture along the struts. They are recommended for high-head concrete reservoir and tank walls.

For use where extreme tensile strength and rigidity as a spreader are required in a form tie for heavy concrete construction, the Richmond Co. recommends their new 1 in. diameter 4-Strut Tyscru. The use of four tie rods rather than two in this assembly provides an ultimate strength of 35,000 pounds.

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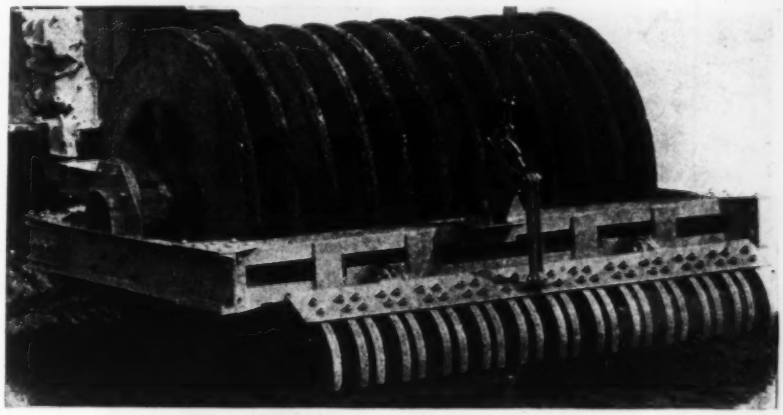
Electrical Sewage Ejector

A modification of their Shone sewage ejector, the new type SEC ejectors of the Yeomans Bros. Co., 1433 Dayton St., Chicago, Ill., do away with the old system of cast iron bells to control the air and exhaust valves, and contain practically no moving parts. In the new design two stationary electrical contacts admit and shut off the compressed air by which the ejector is discharged. The ejector is submersible.

The absence from this ejector of floats or bells, air tanks, float switch, stuffing boxes, and moving parts on or inside the ejector is said by the maker to give high efficiency and low first and maintenance costs.



Disk Tamping Roller

A tamping roller, which is said to insure the proper kneading action on each layer of fill, packing the bottom layers of materials first and building up a solid structure, has been developed by the Parsons Co., Newton, Ohio.

Each disk revolves freely on its own axis, preventing skidding of any unit, and the disks are so formed on their outer edge that as they pack the material the pressure is concentrated on a narrower surface, thus it is said packing the final or top course after the bottom is compacted. Individual disks are lubricated from the terminal of the hollow axle by a positive grease cup.

Rear rakes are provided where it is desired that the material be roughly leveled after each passage of the roller.

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New Line of Motors

A new series of four-cylinder industrial engines, known as series F400, has been developed by Continental Motors Corp., Muskegon, Mich. The three engines in the series have 124, 140 and 162 cu.in. displacement respectively.

(*continued on next page*)

This series incorporates the principle of individual porting which is said to make possible a perfectly balanced uniform flow of fuel, eliminating the starved cylinder and insuring equality of firing impulses. The engines have full length water jackets with front and pump discharging into a gallery under the valve port.

The crankshaft, weighing 35 lb., has 2¼ in. main bearings. The cylinder and crankcase are cast integrally of copper chrome alloy iron, exhaust valves are of austenitic XCR material, and the cylinder head is of cast iron.

These units are furnished either as open type power units with radiator gas tanks or as complete power units with sheet metal housing and muffler. They are also available with heavy duty industrial-type power takeoff with or without clutch.

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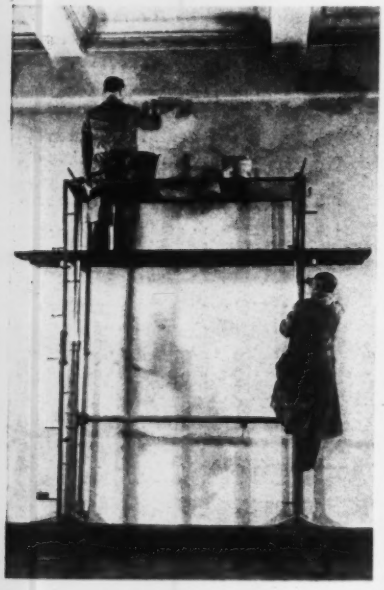
Hydraulic Scaffold

A demountable scaffold that may be raised, extended or moved about by hydraulic mechanisms actuated from the working platform, has been developed by the Decovator Scaffolding Corp., 2988 East Grand Blvd., Detroit, Mich.

The steel "DecoVator" scaffold has



a wide range of types. In one model the platform will drop as low as 3 ft. 2 in., and men can service work up to 22 ft. high.

The platform is elevated by the worker upon it at the rate of 8 f.p.m. and lowered at 10 f.p.m. The entire scaffold structure, which comes with rubber-tired wheels, may be jockeyed from above in any direction without the workman's climbing down, at a ground speed of 50 f.p.m.

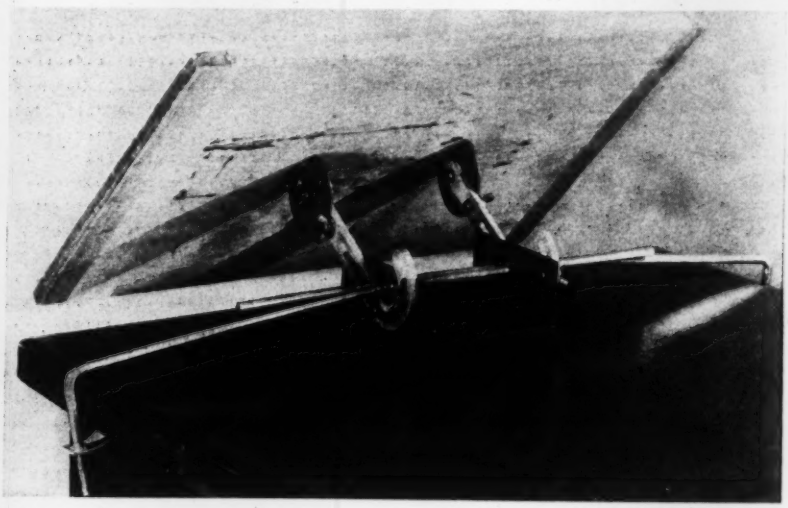
New Northwest Shovel

Model 20 is a new ⅝ yd. shovel recently announced by the Northwest Engineering Co. It is fully convertible from shovel to crane or dragline.

Unusual speed is claimed for this excavator, which is similar in design to the recently announced Northwest Model 25. The design incorporates cast steel bases, side frame integral with the rotating base, and enclosed travel gear.

The "feather-touch" controls and the cushion clutch, which limits the hoist rope pull to a definite value are standard equipment. The swing clutches are of the cone type.

The machine is regularly furnished with a Wisconsin 6-cylinder gasoline engine, but electric or diesel power is available. The shovel equipment is the standard Northwest dipper stick.



Drawing Stand

A new table drawing stand for engineers and draftsmen which is said to attach securely to any size or shape table in a few seconds, has been designed by the Westbrook Equipment Co., 10016 Greenview Ave., Cleveland, Ohio.

The stand is attached to the table by a formed metal base and two rods bent at one end. In order to attach the stand it is only necessary to place it on the table, push the rod through the base with the bent ends close to the sides of the table, spring down the ends of the rods, and slide the end clips securely up under the table. The spring of the rod causes the clips to bind on the rod, keeping tension on the base, and securing the base to the table. Height and angle of the board are regulated by two arms and brackets, held by wing nuts.

The stand is sold for $3.95, without the board.

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Blue Printing Machine

Total utilization of the light from the arc lamp, revolving contact printing which eliminates the necessity for dragging blue printing paper and tracings across a glass surface, and slow drying of the prints are features of the new Revolute 3H automatic blue printing machine of the Paragon-Revolute Corp., Rochester, N. Y. The machine is made up of two units, which may be purchased and used separately, the No. 3 Printer and the Revolute H Finisher. To make prints, the operator need only paste the roll of sensitized paper to the leader paper and lay the tracings on the paper. While passing through the machine the sensitized paper is exposed, developed and dried. The tracings are returned to the tray near the operator, and the finished prints, dried flat and smooth, are delivered at the rear ready for printing.

In the printer, the sensitized paper circles the arc lamps on a turning glass cylinder; thus both the front and back of the arc lamp are used, and it is stated that printing speed per unit of electricity is increased. Tracings and sensitized paper revolve with the pyrex glass cylinder in a positive frictionless contact. This is stated to eliminate generation of static, thus preventing the tracing from sticking to the print.

The six drying cylinders in the finisher are said to provide an unusually large amount of drying area and thus to permit a low drying temperature. Drying temperature is thermostatically controlled and varied by a dial within easy reach of the operator.

The 3H automatic blue printing machine is made in 42-in. and 54-in. widths for operation with 220 volts, a.c. or d.c., with gas or electrically heated dryers.

A. F. GIBSON
Los Angeles
You can square off to the best digging angle in a hurry with this P&H live boom.

THIS LIVE BOOM is quickly adjusted TO ANY WORKING ANGLE

● You'll find many a job where this P&H feature will save you time and money. You can raise or lower the boom to any desired angle—quickly, without changing length of the crowding chain. The one-piece shipper shaft bearing is unit-welded with the boom to eliminate misalignment of pinions and excessive rack wear. So dependable is this design, there is seldom a chain replacement on one of the new P&H Pacemakers. For information on the size you need, address the Harnischfeger Corporation, 4404 West National Ave., Milwaukee, Wis.

HARNISCHFEGER
CORPORATION
EXCAVATORS * ELECTRIC CRANES P&H HOISTS * MOTORS * ARC WELDERS

(Contract Unit Prices continued from page 966)

HIGHWAY BRIDGE, WASHINGTON

OWNER: State Highway Department, Washington; L. V. Murrow, Director.

PROJECT: Construction of 715 ft. overall reinforced concrete bridge, and approaches, consisting of 240 ft. steel truss and 475 ft. of concrete approach spans, with 24 ft. roadway, at Satsop River, Grays Harbor County.

BIDS: Eleven bids were opened on May 18, 1937, ranging from the contract low of $172,245 to a high of $205,845.

CONDITIONS: Work is scheduled for completion within 270 days after contract award, with contractor furnishing all necessary materials for the construction.

LOW BIDDERS:

1. C. L. Creelman, Seattle, Wash. (contract).. $172,245
2. Newton Construction Co. Seattle, Wash..... 175,091
3. Teufel & Carlson, Seattle, Wash..... 176,284

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear	197 acres	$300.00	$100.00	$150.00
2. Grub	175 acres	300.00	100.00	200.00
3. Excav. unclass	27,990 c. y.	.30	.40	.32
4. Excav. struct	190 c. y.	1.00	1.00	1.25
5. Excav. Cl. D	470 c. y.	1.00	.50	.75
6. Slope treatment	500 l. f.	.15	.08	.06
7. Finish roadway	210	10.00	8.00	6.00
8. Select roadway borrow	2,640 c. y.	.70	.50	.40
9. Gravel backfill	20 c. y.	3.00	2.00	3.00
10. Conc. pavt. std	2,237 s. y.	2.50	2.65	2.04
11. Conc. pavt. early set	2,571 s. y.	2.75	2.80	2.29
12. Pavt. header No. 3	40 l. f.	1.25	1.00	.85
13. Reinf. conc. gutter	1,167 l. f.	1.00	.75	.70
14. Pavt. reinf. type 2	6,750 lbs.	.06	.06	.06
15. Dowel bars, caps	700 each	.25	.25	.25
16. Dowel bars, only	2,080 each	.20	.15	.20
17. Conc. Cl. B	5,180 c. y.	25.00	23.00	20.00
18. Steel reinf. bars	7,300 lb.	.06	.055	.06
19. Reinf. conc. fed. aid markers	2 each	20.00	8.00	6.50
20. Cable guard rail, des. 6	2,020 l. f.	.75	.75	.70
21. Conc. catch basin, C. 1, cover	1 each	120.00	40.00	45.00
22. Plug twin arch culvert	total	75.00	50.00	45.00
23. Remove pavt	4,140 s. y.	.50	.60	.50
24. Plain conc. sewer pipe, 8 in.	40 l. f.	.75	1.00	.65
25. Plain conc. sewer pipe, 18 in	120 l. f.	2.50	1.75	1.75
26. Structure excav	2,470 c. y.	6.00	7.00	4.00
27. Conc. Cl. A	820 c. y.	25.00	23.00	30.00
28. Conc. Cl. B	745 c. y.	25.00	23.00	25.00
29. Conc. Cl. D	412 c. y.	20.00	23.00	15.00
30. Steel reinf. bars	298,000 lb.	.052	.05	.06
31. Struct. silicon steel	149,000 lb.	.089	.092	.09
32. Struct. carbon	346,000 lb.	.084	.085	.088
33. Cast steel	5,500 lb.	.14	.15	.20
34. Copper seals	120 lb.	1.00	1.00	1.00
35. Cast steel drains	15 each	22.00	25.00	30.00
36. Precast conc. piling	4,080 l. f.	3.00	3.00	3.50
37. Reinf. conc. railing	948 l. f.	3.00	3.00	4.00
38. Reflector units	4 each	15.00	10.00	10.00
39. Furnish, drive conc. test piles	2 each	150.00	150.00	150.00
40. Install hardware, gaging equip	total	250.00	50.00	300.00
41. Remove old bridge	total	2,200.00	3,000.00	5,820.00

SAN GABRIEL DAM SPILLWAY

OWNER: Los Angeles County Flood Control District; C. H. Howell, Chief Engineer, Paul Baumann, Dam Engineer.

PROJECT: Construction of spillway 500 ft. long, 300 ft. wide, for San Gabriel dam No. 1, in San Gabriel Canyon, 9 mi. north of Azusa, Cal.

BIDS: Eight bids were opened April 27, 1937, ranging from the contract low of $314,170 to a high of $452,701, with contract awarded May 4, 1937. Completion schedule 120 days.

CONDITIONS: Transportation is available by rail and highway from Azusa. Minimum daily wage rates are stipulated at $11.00 for skilled and $5.00 for common labor. Contractor furnishes all material exclusive of cement, admixture, reinforcing steel, mesh, misc. metalware, seals, fillers, bituminous materials, drainage tile, cast iron pipe and burlap, and all fence materials other than wire.

LOW BIDDERS:

1. Gogo & Rados, Los Angeles, Calif. (contract). $314,170
2. Atlas Const. Co., Pasadena, Calif..... 315,158
3. Stroud, Seabrook & Co., Bakersfield, Calif.... 380,015

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cutoff excav., Cl. A	3,150 c. y.	$2.50	$3.00	$5.00
2. Cutoff excav., Cl. B	2,200 c. y.	3.00	4.00	6.00
3. Cutoff excav., Cl. C	1,150 c. y.	3.50	4.25	7.00
4. Cutoff excav., Cl. D	850 c. y.	4.00	4.50	8.00
5. Cutoff excav., Cl. E	420 c. y.	4.50	5.00	8.00
6. General excav., Cl. F	52,000 c. y.	.60	1.00	1.50
7. Special excav., Cl. G	2,000 c. y.	2.75	4.00	4.00
8. Concrete, Cl. A	6,900 c. y.	5.00	5.75	6.00
9. Concrete, Cl. B	9,600 c. y.	7.00	5.60	8.40
10. Concrete, Cl. C	2,000 c. y.	19.00	17.50	18.00
11. Concrete, Cl. D	5,200 c. y.	7.50	7.00	7.00
12. Concrete, Cl. E	160 c. y.	25.00	13.00	8.00
13. Gunite, slab, 6 in	11,000 s. f.	.32	.30	.23
14. Gunite, slab, 2 in	10,000 s. f.	.11	.15	.15
15. Place reinforcing steel	856,000 lb.	.01	.015	.01
16. Place anchor bars	5,300 l. f. hole	.60	.20	.25
17. Drainage gravel	4,000 c. y.	1.95	1.75	2.50
18. Backfill	14,000 c. y.	1.50	.50	1.00
19. Place tile drains	5,600 l. f.	.15	.30	.20
20. Place water seals	6,800 l. f. seal	.10	.25	.05
21. Drill grout holes	8,200 l. f.	1.50	1.00	.30
22. Grouting	4,400 c. f.	1.50	1.00	.80
23. Drill weepholes, 2 in	700 l. f.	.50	1.00	.40
24. Asphalt paving	22,000 s. f.	.12	.20	.15
25. Place fencing	700 l. f.	.10	1.25	.25
26. Place metalware, misc	40,000 lb.	.05	.06	.04
27. Place joint fillers	8,500 s. f.	.04	.25	.05

MERRIMAC RIVER BRIDGE, N. H.

OWNER: State Highway Department, Concord, N. H., John W. Childs, Bridge Engineer.

PROJECT: Steel truss bridge and approaches, 450 ft. overall, over Merrimac River at Boscawen-Canterbury, consisting of two 168-ft. steel Pratt truss spans, and two I-beam approach spans, 50 and 57 ft. respectively. Vertical clearance 14.08 ft. Roadway width 18 ft.

BIDS: Nine bids were opened in April, 1937 ranging from the contract low of $73,852 to a high of $88,491.

CONDITIONS: Labor is limited to 130 hr. per month under W.P.F.R. conditions with wages stipulated at minimums of 75c. for skilled and 40c. for common. Foundation conditions are unstable; all materials required in the construction are to be furnished by the contractor.

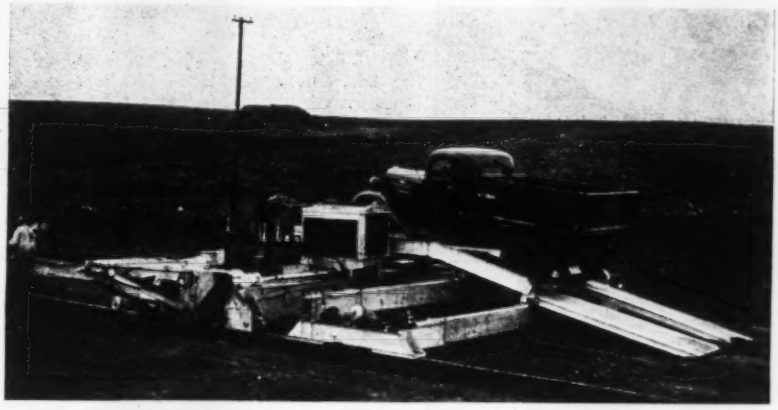
LOW BIDDERS:

1. M. DeGroot, Jericho, Vt. (contract)..... $73,852
2. Chas. I. Hosmer Inc., Greenfield, Mass..... 73,923
3. L. E. McLaughlin Inc., New London, Conn... 76,182

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	0.05 acre	$200.00	$100.00	$1,000.00
2. Remove trees	12 each	10.00	15.00	20.00
3. Fine grading	521 l. f.	.10	.20	.20
4. Earth excavation	259 c. y.	.40	1.00	1.00
5. Ledge excavation	80 c. y.	1.00	1.00	1.00
6. Earth borrow	3,344 c. y.	.50	.50	.50
7. Gravel base course	166 c. y.	.70	1.00	1.00
8. Gravel surface course	161 c. y.	1.00	1.00	1.00
9. Bituminous surface	835 gal.	.15	.18	.15
10. Wood guard rail	656 l. f.	.80	.60	.50
11. Reinforcing steel	79,424 lb.	.05	.05	.06
12. Concrete, Cl. A	196 c. y.	20.00	18.00	17.00
13. Concrete, Cl. B	471 c. y.	17.00	18.00	20.00
14. Concrete, Cl. D	9 c. y.	20.00	20.00	20.00
15. Corr. metal pipe, 12 in	22 l. f.	2.00	2.00	1.00
16. Reinf. conc. pipe, 48 in	112 l. f.	8.00	10.00	12.00
17. Riprap, Cl. A	700 c. y.	2.75	3.00	5.00
18. Riprap, Cl. C	70 c. y.	2.75	3.00	4.00
19. Structural steel	448,650 lb.	.07	.0755	.07
20. Struct. excav. unclass	336 c. y.	10.00	5.00	7.50
21. Steel sheet piling	82 ton	100.00	80.00	125.00
22. Untreated timber piles	4,160 l. f.	.65	.60	.40
23. Treated timber piles	900 l. f.	.90	1.00	1.00
24. Remove superstructure	1 each	2,000.00	800.00	1,500.00
25. Remove substructure	1,928 c. y.	1.50	2.20	.50
26. Stone fill, piers	190 c. y.	2.00	3.00	5.00

NEW AIDS TO THE CONSTRUCTOR

Equipment and material announcements and manufacturers' news



Crawler Mounted Subgrader

Uniformly accurate and compact subgrading at high speed and low cost is claimed by the manufacturer for the new Flynn subgrader, a product of the Flynn Mfg. Corp., Alexandria, La. The subgrader, powered by a six cylinder 66 hp. Wisconsin motor, travels under its own power on the road forms on crawler treads which spread the load over a wide area of form.

Subgrade cutting is done at any of three forward speeds ranging upward to 14 ft. per minute. Excess earth is carried beyond the form line on both sides of the road simultaneously by flight conveyors. Cutting is done by a high speed revolving cutter fitted with teeth which may be set to any contour.

A truck overpass for use where trucking is done on a grade is designed to permit passage of trucks without interference with continual forward operation of the subgrader.

When the machine is used on subgrade treatment and stabilization work, the revolving cutter is lowered to the required depth below the form, and cutting, pulverizing and mixing are done in one operation.

A wagon is provided for transportation of the machine between jobs. The wagon has a tiltable frame and full circle turn with tractor hitch. It can be used for transporting finishing machines, forms and similar equipment while the work is going on.

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EQUIPMENT IN BRIEF

BINDER—The Vertex Co. of New York City has developed a machine to fasten a binding tape over the edges of valuable papers, drawings, photos, etc. With the use of a crepe paper tape, the machine, which operates by the simple turning of a crank, will bind curves or disks. It sells for $19.75.

JACKHAMMER—Ingersoll-Rand Co., Phillipsburg, N. J., has recently introduced a new 55-lb. jackhammer, the JA-55, designed especially for harder rock and deeper holes. A low air consumption is asserted to result from an improved valve design.

BENCH GRINDER—A new 6-in. junior ball bearing bench grinder to sell for $19.95 has been developed by the Black & Decker Mfg. Co. of Towson, Md. The machine is powered by a ¼-hp. motor; it may be used bolted to a bench or placed in any convenient location on four rubber seats.

OUTDOOR OUTLET—Electric outlets for use out of doors where they are exposed to weather have been developed by the National Electric Products Corp., Pittsburgh, Pa. The "Electric Spigot" places a weather-proofed hood and a cover hinged with a heavy spring over the outlet. The hood keeps out rain, snow and ice but is easily raised when is use. The Electric Spigot comes complete in one piece.

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Earth Exploration Devices

Two new tools for the subsurface exploration of the earth by electrical methods have been developed by the American Instrument Co., Silver Springs, Md. The machines, the Shepard earth resistivity meter, and the Lee geoscope, are applicable to any depth from 3 to 2500 ft.

The resistivity meter consists of a potentiometer and current measuring instrument, a reel board attached to the case, and batteries, electrodes, and case. The Shepard meter is used for exploration at a depth of from 3 to 125 ft.

For explorations at depths from 3 to 500 ft., the Lee geoscope is used. Beth instruments measure the resistance of the earth by passing current through the soil from the two steel pins and measuring the difference in potential between two electrodes placed on the surface of the ground at varying distances between the pins.

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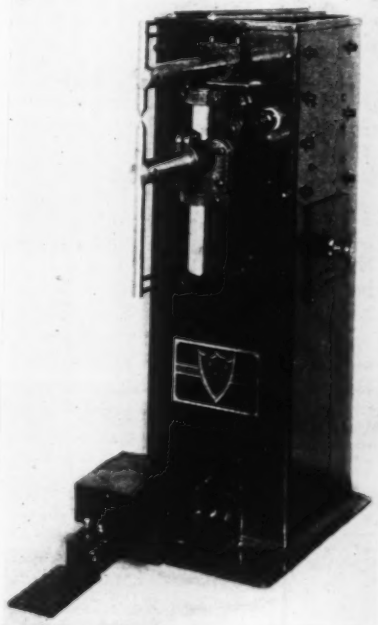
Spot Welder

The significant feature of a new spot welder developed by the Taylor-Hall Welding Corp. of Worcester, Mass., is the fact that the upper electrode moves in a vertical plane rather than on the arc of a circle. This allows easy alignment of the electrode and hence permits two welds to be made simultaneously. The transformer and upper horn assembly are used as the pressure units.

Unusually high speeds are said to be attained due to the new design of rocking step plate, which operates the switch, located on the end of the foot treadle. Pounding at high speeds is eliminated by a design in which the weld is made as the foot is raised. A foot treadle leverage of 3½ to 1 reduces the effort necessary, and a turnbuckle adjustment for the foot treadle is provided so that when flat stock without flanges is being welded the movement of the upper electrode need only be sufficient to release the work.



NEW PUBLICATIONS

COST CHARTS for calcium chloride stabilization of highways have been compiled, based on records of stabilization work in Indiana, Illinois, Michigan, Minnesota, in "Brief No. 123," of the Calcium Chloride Association, Detroit.

"RIVETING ALUMINUM," 35-page booklet including design tables and specifications on the subject, has been issued in revised form by the Aluminum Co. of America, Pittsburgh.

CRUSHERS of the Telsmith and Gyrasphere type, manufactured by the Smith Engineering Works, Milwaukee, are described in a new 16-page bulletin "No. 263-H."

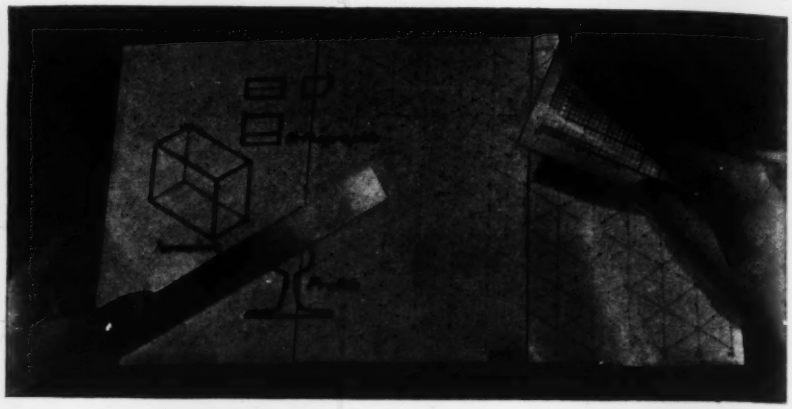
"CONCRETE Floor Treatments by Truscon," a 10-page booklet attractively printed in color, gives specifications for and lists the types and colors available of floor hardening and coloring materials manufactured by the Truscon Laboratories of Detroit.

HYDROGEN ION measurement work should be facilitated by a new catalog "Apparatus for Hydrogen Ion Concentration Measurements in Laboratory and Plant," issued by Leeds & Northrup Co., of Philadelphia. The 32-page catalog describes the latest forms of electrical equipment for determining the acidity or alkalinity of aqueous solutions and gives data on applications, advantages, limitations and other properties of the equipment in order to simplify selection.

A REPRINT of a paper on "Some Consequences of Graphitic Corrosion of Cast Iron," published in *Metals and Alloys*, is being distributed by the International Nickel Co., New York City.

"AERATION OF SEWAGE and Water with Porous Diffuser Plates and Tubes," Engineering Bulletin No. 1 of the Carborundum Co. of Niagara Falls, has been issued in a third revision. The 32-page booklet discusses the applications of porous diffusers, the design of aerators, and the properties of Aloxite Brand porous diffusers. Specifications and notes on the installation and operation of porous diffusers are included.

ASPHALT INSTITUTE of New York City has issued the 1937 edition of its "Asphalt Pocket Reference for Highway Engineers" in a new and enlarged form. The vest pocket size 240-page booklet was written by Prevost Hubbard, chemical engineer, and Bernard Gray, chief highway engineer of the Institute. It contains specifications, directions, and descriptions of equipment, for a wide variety of highway and related uses of asphalt.



Sketch Pad Set

A sketch set for making isometric drawings is offered by the Wade Instrument Co., Cleveland. It consists of a guide plate with isometric guide lines on one side and 8-in. squares on the other made of an easily cleaned moisture- and dirt-proof substance; a pad of transparent tracing paper on a stiff back with the paper gummed on three edges so that the sheet and pattern plate will not shift while drawing; and a thin steel straight edge which slides into the pad when not in use.

The set is furnished in pad sizes of 5½x8½, 8½x11, and 11x17, and sells for $1.

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Lead Paint Pigment

"Leadleaf," a metallic lead pigment which is mixed with a suitable vehicle for application as a paint with brush or spray, has been developed by the Metalead Products Corp. of San Francisco.

The new product is described by its makers as a "fine leaf lead powder in paste form," resistant to alkali dust, acid fumes and extreme temperature changes. The manufacturer particularly recommends it for buildings, bridges, water towers and steel structures generally and as a priming coat on steel or a seal coat on concrete. It is also suggested for wood surfaces exposed to sulphur dioxide or hydrogen sulphide gases or to solutions of copper, zinc and iron.

• • •

Self-guiding Conveyor

The Link-Belt Co. of Chicago has developed a center-guide belt conveyor for use in long distance transportation and in positions where only low headroom is available. The new feature of this belt is a central guide strip molded to the underside and the use of antifriction conveyor idlers having a central roll with a deep groove within which the guide strip runs.

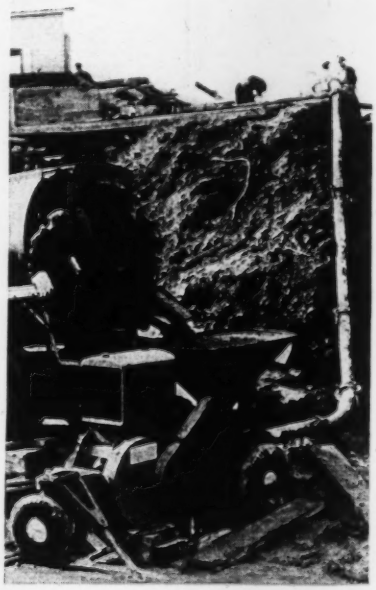
The center-guide conveyor can be furnished for any width of belt; double guides are provided on the wider belts. The belt is known as the Philips Brand, after the Link-Belt engineer who invented it.

• • •

Smaller Concrete Pump

A concrete pump for the use of contractors having projects with a maximum of 5,000 cu.yd. of concrete to be placed which is capable of handling a ½-yd. mixer has been developed by the Chain Belt Co. of Milwaukee in the new Model 160 Rex Pumpcrete.

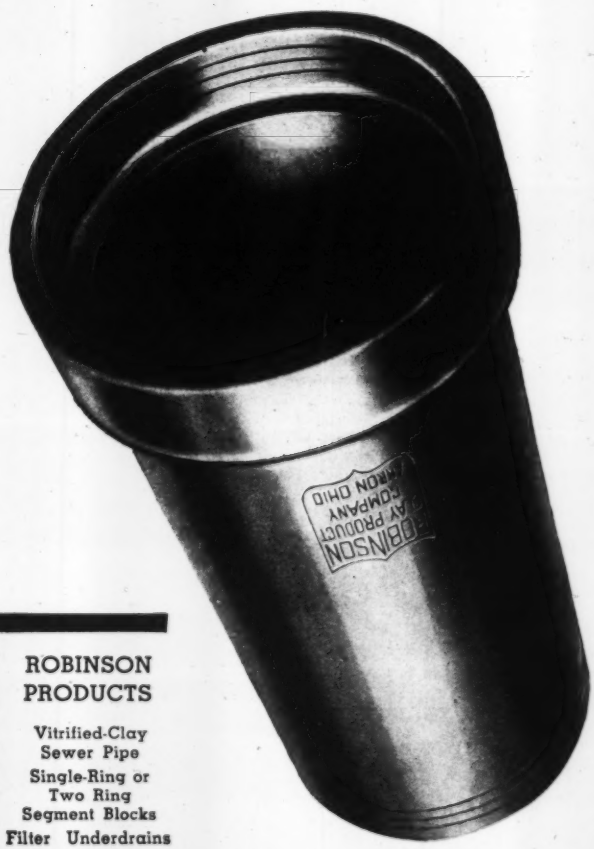
The model 160 is designed along the same principles as used in the larger models. It is mounted on pneumatic tires to permit its being towed from job to job. The new model is powered by a four cylinder gasoline engine and has a rated capacity of 15 to 20 cu.yd. of concrete per hour. It is designed for use with a 6-in. diameter pipe line.



STRENGTH

is an outstanding characteristic of

Robinson Vitrified Clay Sewer Pipe



The remarkable strength of Robinson Vitrified Clay Sewer Pipe is indicated in the following table, using as a guide the A. S. T. M. requirements . . .

DIAMETER	A.S.T.M. C-13-35	ROBINSON PIPE AVERAGE STRENGTH, LBS. PER FT.					
	LBS. PER.FT.	SINGLE		DOUBLE		TRIPLE	
		3 FT.	2 FT.	3 FT.	2 FT.	3 FT.	2 FT.
4	1000				1670		
5					1675		
6	1000			1480	1450		
8	1000			1490	1515		
10	1100			1560	1695		
12	1200			1720	2080	2340	2940
15	1370	1630	1960	2000	2160	3570	3880
18	1540	1885	2130	2375	2600	3720	4250
20		1960	2140	2490	2715		
21	1810			2600	2760		
22				2690	3528		
24	2150	2170	2570	2960	3610	4820	5200
27	2360	2600		3010			
30	2580	2780		3315			
33	2750			4270			
36	3080	3460		4490			

Robinson Vitrified Clay Sewer Pipe is made with a dense smooth vitrified body having low absorption. It is uniform in dimensions and is built to render lasting trouble-free service at the lowest cost.

Our engineers will gladly furnish you with any additional information required.

ROBINSON PRODUCTS

Vitrified-Clay Sewer Pipe
Single-Ring or Two Ring Segment Blocks
Filter Underdrains
Robinson Dry Jute
Vit-Liner Plates
Septic Tanks
Channel Pipe
Wall Coping
Meter Boxes
Drain Tile
Fire Brick
Insulating Brick
High Temperature Cements
G-K Asphaltic Compound for Jointing
Acidware Pipe
Flexlock Joints

ROBINSON

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THE ROBINSON CLAY PRODUCT COMPANY OF NEW YORK
Empire State Building, New York

EASTERN CLAY GOODS COMPANY
Boston, 135 North Beacon Street

N. A. WILLIAMS CO.
Chicago, 111 West Washington Street

THE ROBINSON CLAY PRODUCT COMPANY OF CANADA, LTD.
Toronto, Ontario, Canada, Foot of Shaftesbury Avenue

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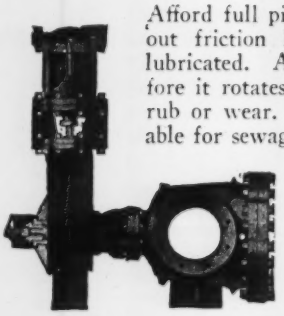
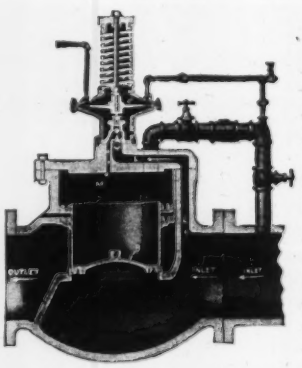
THRU-FLOW CONE VALVE



Afford full pipe line flow without friction loss. Always oil lubricated. Axially unseats before it rotates without friction, rub or wear. Especially desirable for sewage disposal service.

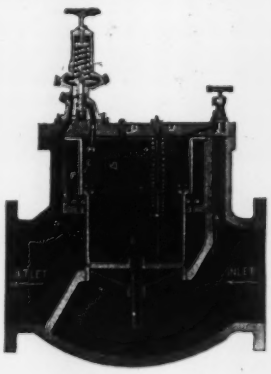
ALTITUDE CONTROL



Assures uniform water level in tanks, standpipes and reservoirs. Suitable for use in single or two-way line service. Heavy internal bronze mounting and air and water cushioning makes valve indestructible. Sizes to 24".

WATER REDUCING VALVE

Assures positive control of low pressure. Air and water cushioning prevents shock or hammer. Supplied with single or dual pilot controls for any service. Sizes to 24".



WATER STRAINER

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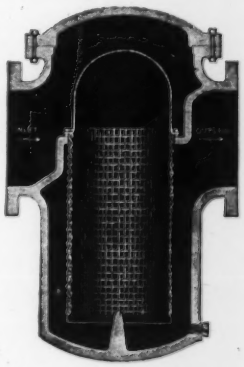

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The panel on the right shows the high spots in the Barber-Greene Line of Standardized Material Handling Machines. The Barber-Greene Bucket Loader is, by far, the cheapest means of loading bulk materials from stockpiles to trucks. Its spiral feed and 12 feeding speeds make it valuable in excavating, grading, stripping, etc. B-G Ditchers are made in four different models to exactly fit different ditching conditions. B-G Bituminous Machines are recognized for their low cost operation and superior quality. If interested in details of any of these machines, simply fill in the name of the machine in the space provided in the coupon.

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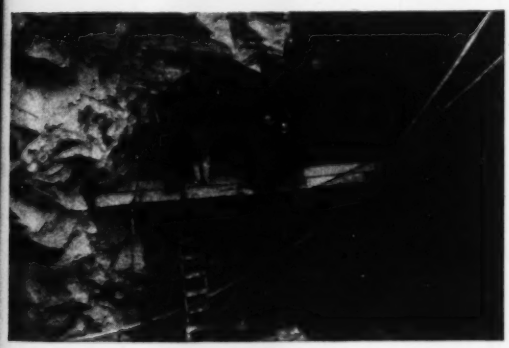

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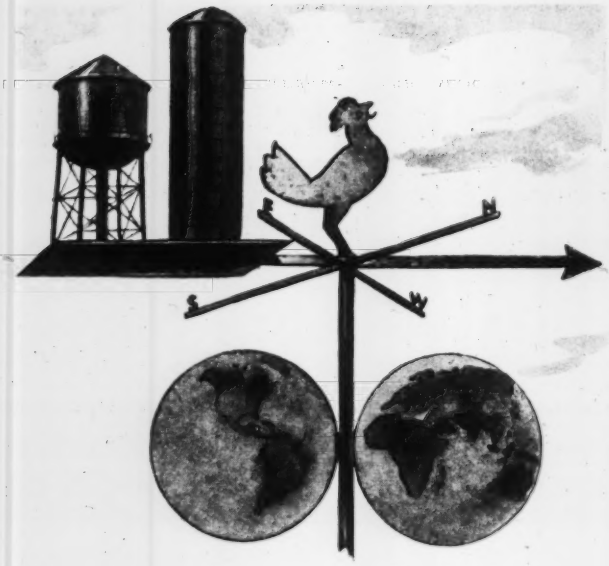

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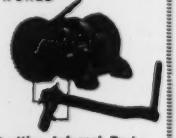

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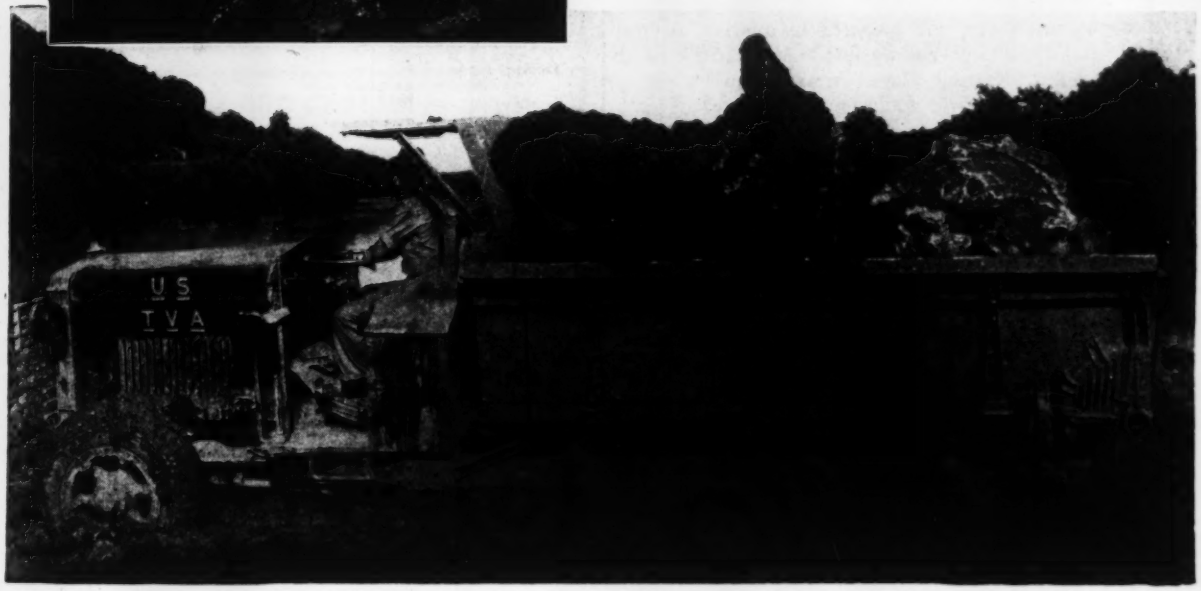

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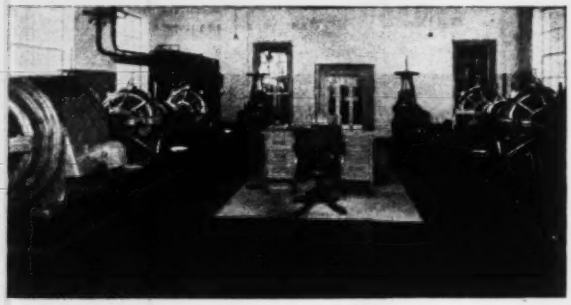

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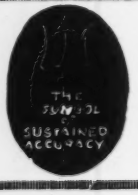

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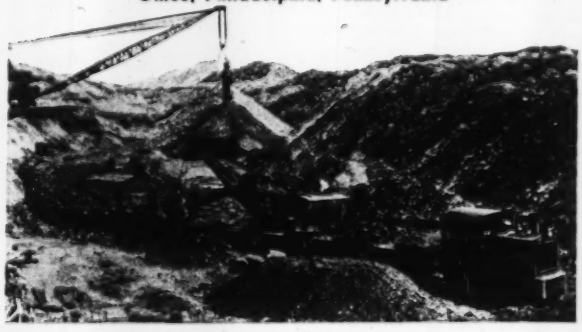

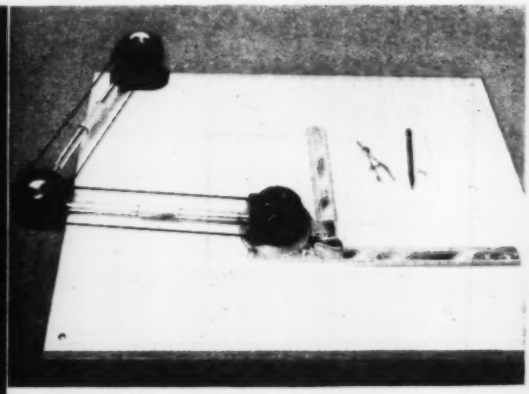

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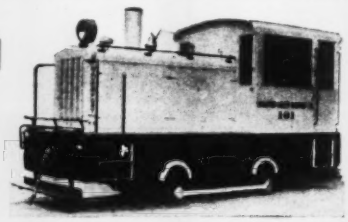

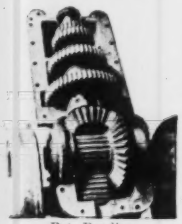

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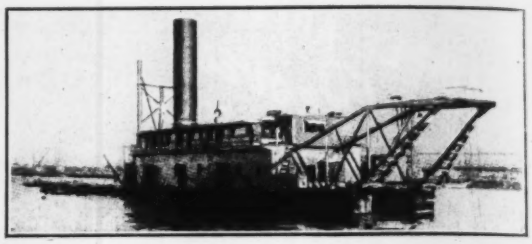

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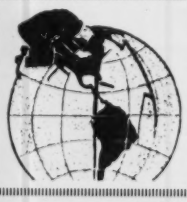

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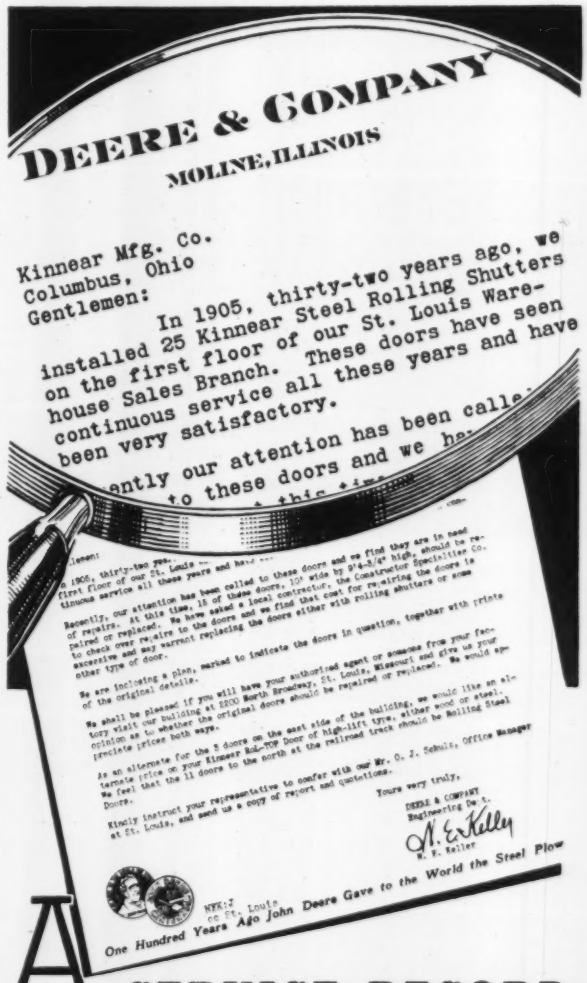
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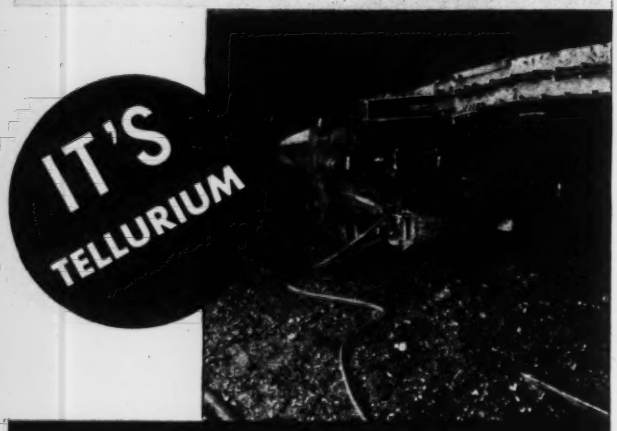

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This ad is one of a series written after visits to coal mines in Pennsylvania, West Virginia, and Ohio. Names of the mines and of the men interviewed will be furnished upon request.

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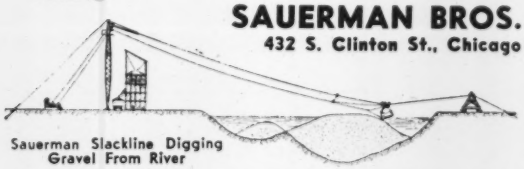

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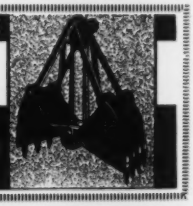

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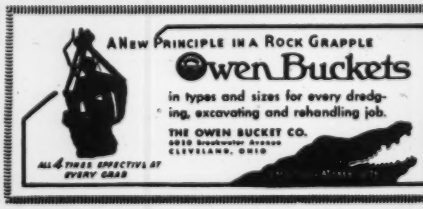

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CONSTRUCTION REPORTS

Engineering and building projects by stage of progress and type reported by ENR correspondents

Construction projects reported in these pages covering the United States and Canada, are of these designated sizes: water supply, earthwork, waterways, $15,000 and over; other public works, $25,000 and over; industrial buildings, $40,000 and over; other buildings, $150,000 and over; covering foreign construction, $500,000 and over.

They are classified in the following groups, named in the order of their publication: Water Supply . . . Sewers, Waste Disposal . . . Bridges, Grade Crossings . . . Streets and Roads . . . Earthwork, Waterways . . . Unclassified . . . Materials, Equipment . . . Reports from Abroad . . . Public Buildings . . . Commercial Buildings . . . Industrial Buildings.

They are reported in these stages: proposed (except Streets and Roads); bids asked; low bidders (projects of $500,000 and over); contracts awarded. Where a previous report has been carried the issue date is noted on the current report. In each stage reports are arranged in geographical order, first by state then by city or town.

Symbols and abbreviations include:

† Federal Government
* Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily News Service

WATER SUPPLY

PROPOSED WORK

Calif., San Francisco — Supervs. City and San Francisco Co., authorize condemnation of pipeline rights-of-way in San Mateo and Santa Clara Counties for extension of pipe lines of San Francisco Water Dpt. facilities to serve Palo Alto and University of Stanford at Palo Alto. To exceed $25,000. N. A. Eckart, 425 Mason St., engr.

†**Calif., Friant**—Bureau Reclamation, Custom House, Denver, Colo., cancelled bids to have been opened Apr. 5, furnishing, delivering 2 motor-driven, vertical-shaft, deep-well turbine pumping units for Friant Dam, Central Valley Project, Spec. 902-D. Noted Mar. 19, C.D.—Mar. 25, E.N.-R.

†**Calif., San Francisco**—Dpt. Justice, Bureau Prisons, U. S. Penitentiary, Alcatraz, withdrew bids to have been opened June 22, furnishing, installing automatic sprinkler system, fire service piping, fire pump, installing cold water meters at U. S. Penitentiary. Noted June 9, C.D.

Colo., Beulah—Town plans 8 in. pipe line from Beulah Soda Springs to Reservoir. $27,069. W.P.A. approves project.

Ga., Atlanta — City plans furnishing all labor and materials, constructing additional settling basins at filter plant consisting seven 300,000 gal. units by adding approximately 21 m.g. daily additional capacity, installing additional pumps at river at Hemphill pumping station. Plans to be released September. Wiedeman & Singleton, Candler Bldg., Atlanta, engrs.

Ga., Newton—City, c/o C. C. Merritt, mayor, making plans waterworks system incl. pipe lines, well, pump and 75 ft. elevated tank, 50,000 gal. capacity. $30,000. J. B. McCrary Co., 22 Marietta St., Atlanta, engrs.

Ill., Lewistown — City indefinitely postponed construction waterworks and distribution system. City rejected $22,090 grant and $28,000 loan from P.W.A.

Ia., Boone—Chicago & Northwestern R R. Co., C. T. Dike, ch. engr., 400 West Madison St., Chicago, Ill., plans installing water treatment plant, incl. 200,000 gal. storage tank for servicing locomotives. Est. about $40,000.

Ky., London—London Utilities Co., London, was granted permission to make improvements consisting of building 6,925 lin. ft. 6 in. and 1,825 ft. 4 in. c.i. mains, installing 28 fire hydrants. $17,085.

Me., Lewiston—City, G. Z. Bernier, supt. Water Dpt., City Hall, making plans municipal pumping and street lighting power plant, additions and alterations to present pumping station, water wheels, raceways, pumps, generators and diesel engines. To generate all power for water pumping and street lighting. $228,000. Application made to P.W.A. for 45% grant. Whitman & Howard, 89 Broad St., Boston, Mass., engrs.

N. Y., Binghamton—City preliminary studies by Layne-New York Co., engrs., 92 Liberty St., New York, for deep well supply, etc. **Maturity soon.**

N. Y., Lewiston—See "Contracts Awarded."

N. Y., Macedon—Village plans waterworks, incl. purchasing, installing 2 large pumps, pump house, relaying pipe. To exceed $15,000. Applied for W.P.A. funds. G. Fremouw, Lyons, engr. Owner and W.P.A. will purchase materials.

N. Y., Tarrytown — Town of Greenburgh, Tarrytown, plans watermains and appurtenances, hydrants, in Old Colony Ridge Development. Taxpayers objected to village undertaking work with own funds. To exceed $25,000. Hearings to be held at once.

N. C., Asheboro—Town plans waterworks system. $87,545. P.W.A. project. W. M. Piatt, Durham, engr. Noted June 3, C.D.—June 10, E.N.-R.

N. C., Boone—Appalachian State Teachers College, B. B. Dougherty, pres., plans waterworks system at school. Bill passed by last General Assembly providing funds.

N. C., High Point—City plans extending 1,300 ft. 6 in. watermain in Meredith St. S. H. Strickland, dir. Pub. Wks.

N. C., Valdese—Town, election July 6, to vote bonds extending and enlarging existing waterworks system, incl. impounding basin and constructing chlorinating plant, $50,000; extending and enlarging existing sanitary sewerage system, $10,000. A. L. Butler, mayor.

O., Belle Center—Village plans special election to vote $18,000 bonds for constructing municipal water works plant. $85,000. Village has been authorized to sell $22,000 worth of utility mortgage bonds. Village share of cost $40,000. Noted Jan. 18, C.D.—Jan. 21, E.N.-R.

O., Fostoria—City plans installing waterlines in West Tiffin St. from Cleveland St. to city limits, in Independence Ave. from Tiffin St. to Francis Ave. and in Elwood Ave. from Tiffin St. to Francis Ave. $15,000. City will purchase materials to cost $4,000. E. Smith, serv. dir., in charge of purchases. W. E. Reardon, Tiffin, W.P.A. engr.

O., Mansfield—City plans waterworks, pumping machinery, pump house, force main, power line, signal recorder. $22,800. P.W.A. project. W. C. Statler, city engr.

O., Warren — Municipality, soon takes bids water treatment plant (water softening). $90,000.

Pa., Pittsburgh—City, Dpt. P. Wks., F. M. Roessing, dir., City-County Bldg., received no bids June 8, furnishing, installing coal handling equipment, operating floors and appurtenances, at Ross Pumping Station. $26,000. J. Croak, City-County Bldg., engr. Noted June 8, C.D.—June 7, E.N.-R.

Tex., Benavides — City, J. M. Momeny, mayor, bids after July 5, waterworks system, incl. 18,000 lin. ft. 2- to 8-in. c.i. pipe, pumping unit, wells, tank and tower, fire plugs, probably surface reservoir, etc. $70,000. Garrett Eng. Co., c/o owner, and 300 Hughes St., Houston, engrs.

Tenn., Clarksville—City plans improving waterworks system. $350,000. P.W.A. approved $157,000 grant. T. H. Allen, 65 McCall St. and R. H. Hoshall, 789 North Evergreen St., Memphis, consult. engrs.

Tex., Cleveland—City, bids after July 5, waterworks system, incl. 22,000 lin. ft. pipe, pumping unit, tank and tower, probably surface reservoir. $90,000. Bonds voted for same. Garrett Eng. Co., c/o owner and 300 Hughes St., Houston, engrs. Noted May 14, C.D.—May 20, E.N.-R.

Tex., Willis—City voted bonds and takes bids after July 12, waterworks system, incl. deep well, cased, ready for pump, pump and motor for well, 50,000 gal. elevated tank and 75 ft. tower, probably steel, 1,500 ft. 8 in. and 10,000 ft. 6 in. c.i. pipe, 15 fire hydrants. $30,000. Garrett Eng. Co., c/o owners, and 300 Hughes St., Houston, engrs. Noted May 11, C.D.—May 13, E.N.-R.

Wash., Mossyrock—P. H. Birley plans water system, incl. 3.5 mi. mains and installing pumping system at spring north of here. $15,000. Owner received 50 year franchise from Lewis County Comn.

Wash., Sedro Wolley—M. S. Campbell, engr., State Dpt. Health, Olympia, proposed to Skagit County Chamber of Commerce formation of water district to construct filter plant to filter water from Skagit River to avoid danger of impure drinking water. $400,000. Chamber has appointed committee to investigate proposal.

Wis., Elkorn—City plans constructing water filtration plant and softening plant. Mead, Ward & Hunt, Madison, engrs.

BIDS ASKED

Calif., Oakland—See "Contracts Awarded."

Minn., Minneapolis—July 7, by F. S. Gram, city purch. agt., 12 electric motors for waterworks. $28,000. F. T. Paul, city engr.

N. Y., Watervliet — See "Contracts Awarded."

O., Conneaut—See "Contracts Awarded."

CONTRACTS AWARDED

Calif., Oakland—East Bay Municipal Utility Dist., 512-16th St., concrete water tank on Grizzly Peak Blvd., near Summit Rd., day labor. Est. **$20,000.**

Calif., Oakland—J. H. Kimball, secy. East Bay Municipal Utility Dist., 412-16th St., furnishing, erecting 25,000 gal. elevated steel water storage tank at Camp Pardee, to Berkeley Steel Constr. Co., 2nd and Camelia Sts., Berkeley, **$4,940.** Bids June 2. Foundations will be constructed by District. Noted May 26, C.D.

Calif., San Francisco — Public Utilities Comn., City Hall, drilling and casing number of observation wells in downstream embankments of San Andres and Pilarcitos Dams, total footage to be drilled about 750 ft. and total number of wells not more than 16, wells to be lined with perforated steel casing 10 in. diam., but provision is to be made to permit a smaller size well in any given location should the contractor be unable to continue the 10 in. bore for the entire depth, to R. Garcia, 2045 University Ave., Palo Alto, **$4,120.** Bids June 10. Noted June 4, C.D.

Ill., Lisle—Sacred Heart Academy, constructing brick pumping station tunnels and 10,000 gal. underground pressure tank for waterworks, to E. H. Melley, Naperville, **$3,200;** piping, switchboard and wiring, to Dieter & Getz, Naperville, **$3,000.** Noted May 20, C.D.—May 27, E.N.-R.

Ill., Riverton — Village, waterworks and distribution system, to P. N. Kruse Co., 77 West Washington St., Chicago. Est. **$40,000. P.W.A.** allotted $38,454 grant and $47,000 loan. Bids Nov. 16. Noted Oct. 28, C.D.—Nov. 5, E.N.-R.

Ia., Traer—City, constructing brick addition on electric light plant for new water softening plant, to C. Soucek, Traer, **$5,000;** water softening equipment, to Permutit Co., 330 West 42nd St., New York, N. Y., **$10,000.** Bids June 9. Noted June 3, C.D.—Apr. 22, E.N.-R.

La., New Orleans—Sewerage & Water Bd., constructing Panola St. auxiliary pumping station, to Pittman Bros., 2800 North Galvez St., **$74,954;** pumps, to Fulton Co., New Orleans, **$18,000.** Subject to **P.W.A.** approval. Bids June 7. Noted June 3, C.D. (Bids Asked), June 3, E.N.-R., under "Contracts Awarded."

Mich., Benton Harbor—City, c.i. pipe watermains, three sections of city for three separate mains, to Santucci Constr. Co., Niles, **$28,073.** Bids May 4. Noted Apr. 19, C.D.—Apr. 22, E.N.-R.

Mich., Breckenridge—Village, constructing c.i. water distribution system with specials, etc., in various streets, to W. L. Johnson & Co., 3807 Burton Ave., Toledo, O., **$27,409. P.W.A.** Bids May 31. Noted May 24, C.D.

Mo., Kansas City—City, installing electric switchboard at pumping station addition, Nicholson and Monroe Sts., to Squire Electric Co., 4th and Delaware St., Kansas City, Mo., **$7,800.** Noted June 9, C.D.—June 17, E.N.-R.

N. Y., Lewiston—Town, extending and improving water system and furnishing, installing 4,600 lin. ft. 6 in. pipe in Ridge District, Contr. A, to Fahning Contg. Co., 460 LeRoy Ave., Buffalo. Est. **$115,284.** Bids later furnishing, installing 31,000 lin. ft. 6- to 10-in. pipe in Dickersonville Water District, Contr. B. Noted Nov. 30, C.D.—Dec. 3, E.N.-R.

★**N. Y., New York**—Bd. Water Supply, 346 Bway., excavation of cutoff trench and sinking 2 exploratory caissons Contr. 338, to Triest Contg. Co., 578 Madison Ave., **$737,777.** Bids June 2, awarded June 16. Noted June 3, C.D.—June 10, E.N.-R.

N. Y., Wanakena—State Dpt. Educ., Albany, repairing dam for water supply for College of Forestry, to G. G. Coopy, 70 Beekmen St., Plattsburgh, **$3,350. Est. $3,163.** Bids June 8.

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RANSOME CONCRETE MACHINERY CO.
Dunellen, New Jersey

Waterworks (Continued)

N. Y., Watervliet—City, constructing watermain extensions and replacing projects, relief labor. **$20,000. W.P.A.** funds allotted. Owner will purchase materials.

O., Conneaut—City, laying new c.i. watermains in Lake Rd., day labor under supervision T. F. Liniger, city engr. **$21,410.** City will purchase materials and equipment. Noted Dec. 2, C.D.—Dec. 10, E.N.-R.

Pa., Easton—See "Sewerage and Waste Disposal."

R. I., Westerly—Town, L. Stanton, chn. Bd. Water Comrs., Town Hall, constructing waterworks system, Contr. 2, pumping station and elevated tank foundations, concrete, brick, to R. Civitarese & A. Piatelli, 56 Rockdale St., Mattapan, Mass., **$10,325** *** Contr. 3, pumping equipment two 400 g.p.m. electric pumps, etc., to F. A. Mazzur Co., Inc., 141 Milk St., Boston, **$8,000*****Contr. 4, 8 in. and up c.i. watermains, to Joseph Di Cicco & Co., 74 High St., Stoneham, **$42,683*****Contr. 5, 200,000 gal. elevated steel tank, to Pittsburgh-Des Moines Steel Co., 270 Broadway, New York, **$19,800** *** Contr. 6, gate valves and valve boxes, and Contr. 7, fire hydrants, to Cambridge Machine & Tool Inc., Potter St., Cambridge, Mass., **$1,630** and **$1,216** respectively. Grand total $83,654. Bids Apr. 29, awarded recently. Noted Apr. 22, C.D.

S. D., Winner—City, Elna B. Nicholson, aud., furnishing materials and constructing 700,000 gal. concrete reservoir, part of general water supply project, to Stadum Bros., Western Surety Bldg., Sioux Falls, **$13,366.** Dakota Eng. Co., Mitchell, engrs. Bids June 4. Noted May 27, C.D.

†Washington—Bureau Reclamation, Denver, Colo., furnishing, delivering 1 motor-driven, vertical-shaft, deep-well pumping unit for Grand Coulee Dam, Columbia Basin Project, Spec. 921-D, to Deming Co., Salem, O., **$1,412.** Bids May 17. Noted May 6, C.D.

Wis., Fox Point—Village, laying watermains, Contr. 8, to T. G. Holton, Inc., 811 South 32nd St., Milwaukee, **$1,892*****sewers, Contrs. 16 and 17, to Wenzel & Henoch Co., 1524 North 27th St., Milwaukee, **$6,440** and **$1,411** respectively. Grand total $3,943. Bids June 7, awarded June 9. Noted June 4, C.D.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Calif., Petaluma—City voted bonds to finance construction of intercepting sewerage system and appurtenances and sewage pumping and treatment works. H. N. Jenks, 2701 Benvenue Ave., Berkeley, engr. Noted Apr. 23, C.D.—Apr. 29, E.N.-R.

Ill., Lewiston — City, indefinitely postponed construction sewage disposal plant and sewerage system. City rejected $22,910 grant and **$27,000 loan from P.W.A.**

Ia., Independence—City plans sewage disposal plant. May apply for P.W.A. funds.

La., Lake Charles—City plans sewage disposal plant. $220,000. Bond issue approved. J. M. Fourmy, Hammond, engr. Noted May 19, C.D.—May 27, E.N.-R.

Mich., Menominee — City Council, plans sewage disposal system. $200,000.

Mo., Windsor—City plans sewage disposal plant. $30,000. W. B. Rollins & Co., Railway Exch. Bldg., Kansas City, Mo., engrs. Plans submitted to State Bd. Health for approval.

N. Y., Vestal — Village plans constructing sewerage system and disposal plant to serve business section and residential district near site of proposed new school. **Maturity soon.** $40,000. State Dpt. Health will require such a system when school is erected. B. Phelps, Jr., Henry St., Binghamton, engr.

★**Pa., Allentown**—City plans sanitary sewerage system extension program, will seek Federal aid to finance. Bids in July on 1 part of project, $100,000, incl. addition to Little Lehigh trunk sewer westward to Franklin St. to serve 12th, 13th and 14th Wards; trunk sewer from Trout Creek south along Lehigh River to Ainey Quarry into 16th Ward, addition to Lehigh trunk sewer into 15th Ward. Total est. $500,000. Specifications now being prepared and bids early in fall on complete sewer project in Dist. 28, comprising old borough of South Allentown and portions of 15th and 16th Wards. City will purchase all materials and equipment for above project. E. Meckley, city engr.

Pa., Titusville—City plans municipal incinerating plant for garbage and refuse. May seek federal funds to aid in financing. J. M. Fay, city engr.

Pa., Williamsport—City plans sewage disposal plant. To exceed $25,000. May seek federal funds to finance. **Maturity later in year.** L. Mussina, city engr.

Pa., Williamsport — Loyalsock Twp. Bd. Supervs., Williamsport, plans sanitary sewerage system in Penna. Ave., River Ave., Tucker St., Washington Blvd. and area between Faxon and Williamsport city line. To exceed $30,000. May seek federal funds to finance. M. C. Krause, West 4th St., engr.

Tex., Benavides—City, J. M. Mooney, mayor, bids after July 5, sanitary sewerage system, incl. 4½ mi. 8- to 18-in. vitr. clay or concrete mains, probably Imhoff disposal system. $60,000. Garrett Eng. Co., c/o owner, and 309 Hughes St., Houston, engrs.

Tex., Cleveland — City bids after July 5, municipal sanitary sewerage system, incl. main lines of 12- to 18-in. vitr. clay or concrete pipe, probably Imhoff system. $50,000. Bonds voted. Garrett Eng. Co., 308 Hughes St., Houston, and Cleveland, engrs. Noted May 14, C.D.—May 20, E.N.-R.

Tex., Giddings — City making plans sanitary sewer extensions, incl. 16,000 lin. ft. 6, 8 and 10 in. vitr. clay tile pipe, etc. J. Rady, Waco and Majestic Bldg., Fort Worth, engr.

Tex., Houston — City, c/o R. H. Fonville, mayor, plans sewage disposal improvements, incl. improvements to South end sewage disposal plant, 2 aeriation tanks, clarifier, air compressor and appurtenances, $150,000; addition to North Side disposal plant, $175,000. J. M. Nagle, dir. P. Wks.

Tex., San Antonio—Bexar Co. Water Control & Impvt. Dist., 7 Olmos Park Terrace, plans 3 mi. 8 to 16 in. vitr. clay or concrete sanitary sewer collecting lines San Antonio-Olmos Dist. $60,000. H. R. F. Helland, c/o Frost Bank Bldg., has been instructed to proceed with immediate plans and district will set bond election date at once. Noted May 7, C.D.—May 13, E.N.-R.

Wis., Luck—Village, L. P. Peterson, clk., making plans constructing sanitary sewer system and disposal plant. To exceed $25,000 (not official). Druar & Milinowski, 830 Globe Bldg., St. Paul, Minn., engrs.

Wis., Milwaukee — Sewerage Comn. soon takes bids constructing waste sludge line, drain line, insulation and roofing of operating galleries, concrete deck over effluent chlorinator. $59,000. J. L. Ferebee, Milwaukee, ch. engr.

Wis., Shell Lake—City, plans constructing sewers and disposal plant. $40,000. J. Wilson, 610 Torrey Bldg., Duluth, Minn., engr.

Alta., Red Deer—Municipality making plans complete new sewerage system. $75,000. J. R. Jones, Town Hall, engr.

Ont., Fort William — Municipality making plans vitr. clay and rein.-con. sewers in various streets. $30,000. C. B. Symes, City Hall, engr.

BIDS ASKED

†Calif., Sacramento—July 16, by Con. Q. M., constructing sewage disposal plant at Sacramento Air Depot.

Md., Towson—June 28, by Comrs. Baltimore Co., Court House, altering and constructing addition to sewage treatment works; excavating trenches, furnishing, laying 17,000 lin. ft. 6- to 15-in. vitr. and c.i. pipe sewers at Turners Station. W. H. Milling, pres. Bd. Comrs. J. R. Haut, ch. clk. S. A. Green, Towson, ch. engr.

Mich., Detroit—July 7, by L. Galenhardt, comr. P. Wks., furnishing labor and material for constructing concrete barrel sewer 12 ft. 9 in. inside diam. 5622 ft. tunnel shield construction and 208 ft. in open cut with appurtenances, Oakwood Interceptor in Miller, Fort cutoff, Flora and Foreman Aves. from Grit Chambers to Lonyo Outlet Sewer, P.W.A. project. M. A. Fisher, City Hall, asst. city engr.

N. Y., Buffalo—July 2, by G. Summers, city engr., constructing 27- to 39-in. diam. vitr. segmental block, rein.-con. or brick masonry sewer on south side of Chancer St. between Starin and North Parker Sts.; 10 in. vitr. tile sewer on east side Hawthorne Ave.; 10 and 15 in. vitr. sewer west side Hawthorne Ave.; 10 and 20 in. vitr. sewer west side Hecla St.; 15 and 18 in. vitr. tile sewer on east side Hecla St.

N. Y., Falconer—See "Contracts Awarded."

O., Waynesville—See" Contracts Awarded."

Pa., Easton—See "Contracts Awarded."

LOW BIDDERS

★**N. Y., Brooklyn**—R. V. Ingersoll, Pres. Brooklyn Boro. Boro Hall, June 17, constructing storm water sewer in Flatbush Ave. easterly side and sanitary sewer in Flatbush Ave. westerly side and in Avenue U, etc.; temporary sewer in Avenue Y and Knapp St., from P. Tomasetti Contg. Co., 1066 60th St., $1,861,334. Noted June 8, C.D.—June 10, E.N.-R.

CONTRACTS AWARDED

Conn., Hartford — Bd. Contr. & Supply, Metropolitan Dist., R. Dillon, clk., constructing 6,527 ft. 42, 48, 51, and 54 in. intercepting sewer, incl. 4 river crossings and 246 ft. tunnnel, North Interceptor Sewer, Contr. 18, to Middle West Constr. Co., 9401 Sandusky Ave., Cleveland, O., **$136,240. P.W.A.** Bids May 25. Noted May 17, C.D.—May 20, E.N.-R.

Conn., Hartford — Bd. Contr. & Supply, Metropolitan Dist., constructing 11,400 ft. 8 and 18 in. tile sewers, Blue Hill Sect., Contr. C, to G. DiBerardino & Co., Rocky Hill, **$18,050;** 4,900 ft. 8- to 12-in. sewers, Blue Hill

sewers, etc. (Continued)
Sections, Contr. D. to Piatelli & Civitarese, 56 Rochdale St., Mattapan, Mass., **$30,283.** Bids May 28. Noted May 28 C.D.

Ill., Chicago—Chicago Sanitary Sewer Dist., 910 South Michigan Ave., constructing Upper Des Plaines Intercepting Sewer, Contr. 7-B, to Michael Pontarelli, Inc., 4248 North Kilpatrick St., **$354,570. P.W.A.** Bids Apr. 22. Noted Apr. 13, C.D.—Apr. 15, E.N.-R.

Ill., Chicago — Sanitary Dist. of Chicago, 910 South Michigan Ave., constructing Contr. 9, Southwest Side Intercepting Sewer, to M. J. Boyle & Co., 1744 North Mozart St., **$322,059. P.W.A.** Bids Apr. 29. Noted Apr. 19, C.D.—Apr. 22, E.N.-R.

★**Ill., Chicago** — Sanitary Dist. of Chicago, 910 South Michigan Ave., furnishing, installing coal and sludge handling equipment Div. AA, Southwest sewage Treatment Works, to Link Belt Co., 300 West Perking Rd., **$251,296*****Div. CC, sludge disposal building same project, to Jacobson Bros. Co., 19 South LaSalle St., **$492,517*****sludge drying equipment, Div. OO, same project, to Combustion Eng. Co., Inc., 208 South Clark St., **$520,692.** Grand total $1,265,505. **P.W.A.** Bids June 3. Noted May 17, C.D.—May 20, E.N.-R.

Mass., Boston — Commonwealth of Massachusetts, Metropolitan Dist. Comn., Sewerage Div., W. E. Whittaker, secy., reconstructing timber sewerage trestle and furnishing material and machinery at Deer Island, Boston Harbor, to M. F. Gaddis, 6 Beacon St., about **$15,000.** Bids May 27, awarded June 8.

Mich., Midland—City, constructing concrete and vitr. crock sewers in lateral sewer district, to L. W. Wells, Saginaw. **$34,593.** Bids June 1. Noted May 24, C.D.—May 27, E.N.-R.

New York—Dpt. Sanitation, 125 Worth St., mechanical equipment, etc., for Tallmans Island Sewage Treatment Works, Contr. 4, to Worthington Pump & Mchy. Co., 2 Park Ave., New York, **$469,000.** P.W.A. Bids June 1. Noted May 14, C.D.—May 20, E.N.-R.

N. Y., Falconer—Village, constructing sewage disposal plant, day labor, under supervision of S. Benson, village engr., **$88,386,** $42,000 bond issue voted. $46,386 allotted by W.P.A. Owner will purchase materials. W. Lozier & Co., 10 Gibbs St., Rochester, engrs. Noted May 19, C.D.—May 27, E.N.-R.

N. Y., Grand Island — Town, constructing sewage disposal plant, to J. Schaaf, Hotel Statler Bldg., Buffalo. Est. **$31,968. P.W.A.** Bids Apr. 29. Noted Apr. 26, C.D.—Apr. 29, E.N.-R.

★**N. Y., Long Island City**—J. J. Halleran, acting pres. Queens Boro, Queens Subway Bldg., constructing trunk sewer across Grand Central Parkway extension, to C. F. Vachris, Inc., 827 Remsen St., Brooklyn. **$977,912.** Bids June 7. Noted June 9, C.D.—June 17, E.N.-R.

N. Y., St. George—J. A. Palma, pres. Richmond Boro, Boro Hall, sanitary sewer in Lincoln Ave., to Trifoglio Constr. Co., 466 Cary Ave., **$106,762.** Bids June 8. Noted June 2, C.D.

O., Waynesville—Village, constructing sanitary sewerage system, **W.P.A.** labor. **$88,000.** Owner taking bids on materials July 1. M. B. Shepard, Harvard Bldg., Dayton, engr. Noted Nov. 30, C.D.—Dec. 3, E.N.-R.

Pa., Easton—City, constructing 1,600 ft. sanitary sewer and appurtenances and 490 ft. laterals and manholes in Juniper and Raspberry Sts., **$16,433;** also constructing c.i. watermains, valves and hydrants in Lafayette St., **$7,048,** day labor. City purchases materials and equipment. C. A. Reese, city engr.

Pa., Merion—See "Roads."

Wis., DePere—City, to P. and D. General Contractors, Inc., 607 West Mitchell St., Milwaukee, general contract sewage disposal plant, **$106,893*****to Dorr Co., 221 North LaSalle St., Chicago, Ill., 2 center feed primary clarifiers **$8,150;** mixers **$2,760;** grit collector and washer **$3,670*****to Pacific Flush Tank Co., 4241 North Ravenswood Ave., Chicago, Ill., floating cover **$7,110*****to Yeoman Bros. Co., 1433 North Dayton St., Chicago, Ill., 2 sludge pumps **$1,156;** sewage pumps **$1,533** ***to Bailey Meter Co., 523 East Day Ave., Milwaukee, flow meter **$714.** Grand total $131,986. **P.W.A.** Bids June 4. Noted May 20, C.D.—May 27, E.N.-R.

BRIDGES, GRADE CROSSINGS

PROPOSED WORK

Conn., New Britain — New York, New Haven & Hartford R. R. Co., and E. E. Oviatt, ch. engr., New Haven, and City, G. Molleur, city engr., bids in late summer, widening 105 ft. steel, concrete bridge, Corbin Ave. $30,000.

Fla., Jacksonville — H. F. Shedden, city engr., completed plans widening, repaving Broad St. viaduct and part Broad St. $81,730. Cost will be born by City and Jacksonville Terminal Co. with part of cost divided between Atlantic Coast Line, Seaboard Air Line and Florida East Coast Railways.

★**Fla., Jacksonville** — City takes bids in about 60 days constructing new viaduct and connecting approaches between present Lee St. and Broad St. viaducts to relieve the traffic from Riverside and St. Johns River bridge and the business section of the city. $598,850. The Riverside entrance will start on Magnolia St. with branch to Riverside Ave. and Oak St. and will terminate at the north end on Houston St. and branching to West Adams. Application has been made to P.W.A. for 45% of the cost and balance will be borne by City, Atlantic Coast Line, Seaboard Air Line and Florida East Coast Railways and Jacksonville Terminal Co. J. F. Reynolds, consult. engr., 1028 East Bay St., Jacksonville, in collaboration with H. E. Shedden, city engr., completed plans. Noted Apr. 23, C.D.—Apr. 29, E.N.-R.

Iowa—State Hy. Comn., Ames, soon takes bids constructing 13 rein.-con. pipe culverts and 4 rein.-con. box culverts and extensions, incl. 244 cu. yd. Class 1 and 685 cu. yd. Class 3 excav.; one 16x20 ft. slab bridge extension and 40x24 ft. I-beam bridge, incl. 205 cu. yd. Class 1, 167 cu. yd. Class 2 and 360 cu. yd. channel excav. on Primary Rd. 5, from Alta southeast to Storm Lake, Buena Vista Co. F. R. White, Ames, ch. engr.

Ia., Council Bluffs—Pottawattamie Co., W. J. Flood, aud., plans bridges and culverts, $46,541. P. V. Saum, co. engr.

Ia., Ottumwa—City, G. W. McCurdy, engr. superv. plans repairing Vine Street Bridge over Des Moines River and rebuilding south approach. $43,000. $12,333 city's share. **Maturity in July.**

Missouri—State Hy. Comn., Jefferson City, plans constructing two 12 ft. rein.-con. slab spans over branch, three 12 ft. rein.-con. slab spans over Rhinehart Branch, two 10 ft. rein.-con. slab spans over branch, and one 12 ft. rein.-con. slab span over branch, on Route SD, Route 71-Stotesbury Rd., Vernon Co.; reflooring 100 ft. lift span with opening grid flooring over Osage River, on Jefferson City-St. Louis Rd., Route 50-63, Cole Co.; one 41 ft. I-beam span bridge creosoted pile substructure, concrete floor over Willow Creek on Breckenridge-Braymer Rd., Route SA, Caldwell Co.; one 35 ft. and two 30 ft. rein.-con. deck girder spans on Pleasant Hill to Harrisonville Rd., Route 7, Cass Co.; two 10 ft. rein.-con. slab spans over Todd Branch on road from Syracuse to Versailles, Route SD, Morgan Co.; three 10 ft. rein.-con. slab spans over Bellew Creek, on Route 40, Weldon Springs Rd., Route SK, St. Charles Co.; one 16 ft. rein.-con. slab span over Turkey Creek, Gainesville-Theodocia Rd., Route SC, Ozark Co.; three 45 ft. rein.-con. deck girder spans, concrete substructure over Clark Creek, Patterson-Brunot Rd., Route SW, Wayne Co.; two 10 ft. x 8 ft. rein.-con. box culverts, underpass for pedestrians on Columbia-McNaine Rd., Route SK, Boone Co.; three 25 ft. I-beam spans, 22 ft. roadway, over West Medicine Creek Drainage Ditch, Mercer Co.; five 50 ft. rein.-con. slab spans and two 5 ft. side walks, concrete substructure over Turkey Creek, Hollister Rd. South, Route 65, Taney Co.; constructing six 90 ft. steel plate girder spans, 21 ft. roadway, 4 ft. sidewalks, concrete floor and substructures, and approaches, also reflooring 1,750 ft. main trusses with steel, concrete floor and reconditioning 1,000 ft. concrete approach for bridge over Missouri River, St. Louis-Kansas City Rd., Route 61, St. Louis and St. Charles Counties. C. W. Brown, ch. engr.

New York — Dpt. P. Wks., Albany, plans constructing steel, concrete bridges on Sidney-Masonville Rd., $17,000; on Richfield Springs Rd., $41,000; on Route 7, east of Cobleskill, $82,000. **Maturity soon.** T. F. Farrell, State Bldg., Albany, engr.

★**N. Y., Buffalo**—City, City Hall, plans constructing high level bridge from Erie St. to Fuhrmann Blvd. $2,000,000. Governor Lehman signed bill authorizing construction and owners negotiating with railroads affected to decide on division of cost. Noted Mar 18, C.D.—Mar. 25, E.N.-R.

N. Y., Dobbs Ferry and **Ardsley**—New York Central R. R. Co., J. W. Pfau, ch. engr., 466 Lexington Ave., New York, plans steel, concrete grade crossing elimination to carry Ashford Ave. over Saw Mill River Parkway and Putnam Div. of railroad, from Allen St., Dobbs Ferry to Addyman Sq., Ardsley. To exceed $100,000. **Maturity soon.**

N. Y., Rochester—Lehigh Valley R. R. Co., G. T. Hand, ch. engr., 143 Liberty St., New York, and City of Rochester, plan constructing bridge to carry railroad tracks over River Blvd., near University of Rochester. To exceed $100,000. Noted May 12, C.D.—May 20, E.N.-R.

Oklahoma—State Hy. Dpt., Oklahoma City, preliminary plans constructing 5 span 270 ft. bridge at Carden, Ottawa Co. $25,000; 9 span 336 ft. I-beam bridge on piers, at Big Cabin, Mayes Co. $28,000; 2 span 300 ft. steel truss bridge on piers, at Panama, LeFlore Co. $25,000; 8 span 320 ft. I-beam bridge on concrete piers, Norman, Cleveland Co. $31,000; 9 span 310 ft. rein.-con. bridge at Seiling, Dewey Co., $27,000; 11 span 440 ft. I-beam bridge on concrete piers, Waurika, Jefferson Co. $42,000. V. T. Moon, Capitol, Oklahoma City, state hy. engr.

Pa., Scranton—See "Earthwork, Irrigation, Drainage, Waterways."

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West Virginia and **Ohio**—Steubenville, East Liverpool & Beaver Valley Traction Co. plans repairing bridge over Ohio River from Chester, W. Va., to East Liverpool, Ohio. $250,000. C. M. Necid, c/o owner, engr.

Wis., Milwaukee—City plans repairing North Ave. Viaduct. $115,000. R. E. Stoelting, comr. Most of above amount will be expended by informal contracts.

Alaska, Juneau — Pub. Roads, Federal Bldg., Juneau, soon takes bids constructing bridges, $350,000. M. D. Williams, c/o owner, engr.

BIDS ASKED

Connecticut—June 28, by State, State Hy. Dpt., Hartford at office of J. A. Macdonald, state hy. engr., Hartford, constructing concrete abutments and bituminous macadam approaches and resetting existing superstructure of bridge over French River at North Grosvenordale St., Thompson; rein.-con. bridge over Lake Whitney and 3,150 ft. approaches, alternate bids on four types of pavement, Hamden; twin 72 ft. BCCM pipe culvert and 150 ft. rolled bank run gravel approaches, Perrin Brook on Bensamon Rd., Woodstock Flood Relief project. To exceed $25,000.

Georgia—July 2, State Hy. Bd., Atlanta, bridge over Little Sand Creek on Sycamore-Ocilla Rd., Turner Co.; widening present concrete arch bridge to 40 ft., on Summerville-LaFayette Rd., Chattooga Co.

Iowa—June 30, by State Hy. Comn., Ames, constructing 14 rein.-con. pipe and 5 rein.-con box culverts on relocation Primary Rd. 33, northeast of Sibley, Osceola Co., incl. 456 cu. yd. Class 1 and 1,040 cu. yd. Class 3 excav. F. R. White, Ames, ch. engr.

Ia., West Union—June 29, by Fayette Co., West Union, J. H. Cline, aud., constructing 6x6x31½ ft. rein.-con. box culvert, and grading 6 mi. county trunk highway road system, incl. 120,000 cu. yd. Class 2 earth and 45,000 cu. yd. Class 2a excav. O. C. Thompson, co. engr.

Maine—June 30, by State, L. D. Barrows, ch. engr., Augusta, Littlefield Bridge over Little Androscoggin River, Auburn, substructure involving 927 cu. yd. rein.-con. superstructure, 58 tons structural steel, to exceed $30,000; Jacksonville Bridge over East Machias River, East Machias, 508 cu. yd. rein.-con. substructure, 55 tons structural steel, to exceed $20,000; French Mill Bridge over French Stream, Exeter, 326 cu. yd. rein.-con., to exceed $6,500; Black Stream Bridge over Black Stream, Levant, to exceed $4,500; Pottle Bridge over Big Brook, Mechanic Falls and Minot, 3,650 lin. ft. treated piles and 54 MBM treated lumber, superstructure approximately 84 tons, to exceed $30,000; College Swamp Bridge, Otisfield, 92 cu. yd. rein.-con., to exceed $2,000.

Maryland—June 29, by State Roads Comn., Baltimore, triple 65 ft. span, steel I-beam bridge over W. M. R. R. tracks, Reisterstown-Hampstead Rd., Glen Morris, Contr. B-108-1-421, Baltimore Co.; single 30 ft. span concrete rigid frame bridge on timber piles over Mouldy Run on Leonardtown-Great Mills Rd., Contr. SM-160-1-827, St. Mary's Co.

Massachusetts—June 29, by Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, W. F. Callahan, comr., flood replacement bridges and approaches, incl. steel stringer bridge and concrete approaches, Project WPFR 19, State Serial 11931, Athol and Orange, $30,000; Project WPFR 21, State Serial 11926, Orange, $30,000; Project WPFR 53, State Serial 11912, Athol, $30,000; Project WPFR 60, State Serial 11009, Berlin, $21,000; Project WPFR 66, State Serial 10553, Dudley, $22,000; Project WPFR 69, State Serial 11915, Fitchburg, $33,000; Project WPFR 105, State Serial, Sutton, $27,000; Project WPFR 124, State Serial 11919, $18,000; concrete and steel repairs to present bridge Project WPFR 39, State Serial 12388, Lowell, $12,000; 2 steel arch bridges and concrete approaches, Projects WPFR 5 and WPFR 6, State Serial Nos. 11928 and 11933, Colrain, Charlemont and Shelburne, $90,000. Total est. $283,000.

New York—See "Roads."

N. Y., Canaseraga — Bd. Supvrs, Allegany Co., Belmont, bids about July 1, constructing steel, concrete bridge. Est. about $25,000. Noted May 26, C.D.—June 3, E.N.-R.

N. Y., Hamlin—See "Contracts Awarded."

Ohio—See "Roads."

Pennsylvania—July 1, by Comrs. Chester Co., West Chester, and Montgomery Co., Norristown, reconstructing Madison Bridge, over Schuylkill River, consisting of 6 additional steel truss spans matching 92 ft. long with 20 ft. roadway, 1 sidewalk, 3 new piers, Montgomery Co. 190 and Chester Co. 220, between Kenilworth and Pottstown.

Virginia—See "Roads."

Wisconsin—July 2, by State Hy. Comn., and Hy. Committees of Adams, Barron, Dane, Juneau, LaCrosse, and Vernon Counties, Madison, constructing 3 timber trestle bridges on Stoaddard-LaCrosse Rd., S.T.H. 35, State Projects 5420 and 5422, Vernon and LaCrosse Counties; constructing four I-beam and concrete bridges on Bangor-Cataract Rd., La Crosse Co.; incl. 14,291 cu. yd. excav.; grading and bridge on 0.227 mi. Barron-Turtle Lake-St. Croix Falls (Division St., in Barron) Rd., Barron Co., 49,299 cu. yd. excav.; overhead structure on Barron Turtle Lake-St. Croix Falls (Almena Grade Crossing) Rd., U. S. Hy. 8, F.A. Grade Crossing Project [illegible] H, Barron Co.

Wis., Manitowoc—July 1, by Manitowoc Co., constructing Tannery Bridge, 105 ft. long, treated timber, incl. 170 cu. yd. excav. Noted Sept. 25, C.D.—Oct. 1, E.N.-R.

Ontario—See "Roads."

CONTRACTS AWARDED

Calif., Marysville—W. M. Strief, clk. Yuba Co., constructing 20 ft. wide detour, ¼ mi. long at Rio Oso Bridge and extension to and raising of north end of Rio Oso Bridge over Bear River in Rd. Dist. 1, to M. A. Jenkins, 3560 Y St., Sacramento, **$15,770.** Noted May 26, C.D.

Colorado — State Hy. Dpt., Denver, constructing railroad overpass and approaches 0.638 mi. hy. 2½ mi. south of Buena Vista on State Hy. 4, Chaffee Co., to Deakins & Gustafson, 2976 Bellaire St., Denver, **$55,961.** Bids June 7, awarded June 8. Noted May 26, C.D., under "Roads."

Connecticut—State Hy. Dpt., at office J. A. Macdonald, state hy comr., Hartford, bridge over Blackwell's Brook and rolled gravel surfacing approaches on 815 ft. Windham Center-Brooklyn Rd., Brooklyn, to C. W. Blakeslee & Sons, 58 Waverly St., New Haven, **$16,101** ***slab bridge over Still River, and rolled gravel surfacing approaches on 220 ft. hy. County Rd., Eastford, to A. Jarvis, 416 Center St., Manchester, **$5,439*****bridge and rolled gravel surfaced approaches on 390 ft. Long Mt. Rd., New Milford, to John De Michiel & Bros., 58 High St., Torrington, **$11,139***** rigid frame bridge (highway overpass), at Winnepauk, Norwalk, to Mariani Constr. Co., 222 Forbes Ave., New Haven, **$44,397.** Grand total $77,376. Bids May 10. Noted May 3, C.D.—May 6, E.N.-R.

★**Ill., Chicago**—Dpt. P. Wks., City Hall, constructing 103rd Street Viaduct, to Ketler Elliott & Co., 3101 South California Ave., **$564,387.** Bids Apr. 27. Noted May 6, C.D.—May 13, E.N.-R.

Indiana — State Hy. Comn., Indianapolis, constructing 12 span 410 ft. rein.-con. girder bridge over Southern Ry., Crawford Co., to R. P. Oblinger, Huntingburg, **$111,981** est. $127,244; bridge in Morgan Co., to R. J. King, Danville, **$48,630** est. $56,285. Bids June 1. Noted May 14, C.D.—May 20, E.N.-R.

Indiana — State Hy. Comn., Indianapolis, constructing bridge over North Branch, Switzerland Co. to Steinkamp Constr. Co., Batesville, **$25,957.** Est. $33,771. Bids Mar. 16.

Kentucky — State Dpt. Hys., Frankfort, overhead and approaches on 0.565 mi. Mayfield-Fulton Rd., Graves Co., to A. Lyons, Rogersville, Tenn., **$88,744.** Bids June 11. Noted May 24, C.D.—May 27, E.N.-R., under "Roads."

★**La., Baton Rouge**—State Hy. Comn., constructing main superstructure to bridge across Mississippi River, Project 2606, Contr. 2, near here, to Bethlehem Steel Co., Bethlehem, Pa., **$3,705,855.** Bids May 26. Noted June 2, C.D.—June 3, E.N.-R.

Mich., Mount Pleasant—Isabella Co. Road Comn., steel work for replacement existing structures at 10 locations in county, to F. Yeager Bridge & Culvert Works, Port Huron, **$15,592.** Total est. $77,931. **W.P.A.** G. Foster, Lansing, engr.

Mississippi—See "Roads."

Missouri—State Hy. Comn., Jefferson City, constructing three 40 ft. rein.-con. deck girder spans over Route 24 and three 20 ft. rein.-con. slab spans over Puzzle Creek, Chariton Co., to Scherer & Bennett Constr. Co., Kansas City, **$30,569.** Bids May 1. Noted Apr. 20, C.D.—Apr. 22, E.N.-R.

New Hampshire—State Hy. Dpt., Concord, 124 ft., rein.-con. railroad overpass and approaches East Kingston, Rockingham Co., to Central Constr. Co., Lawrence, Mass., **$33,599,** est. $45,000; 113 ft. flat slab on I-beams and approaches, New Boston, Hillsboro Co., and 29 ft. slab bridge and approaches Webster, Merrimack Co., to Cocheco Eng. & Constr. Co., Rochester, **$20,224** each, est. **$25,000** and **$15,000** respectively. Grand total $74,047. Bids June 11. Noted June 2, C.D.

★**New York**—Triborough Bridge Authority, Administration Bldg., Randall's Island, Manhattan Boro, constructing tower piers and foundations for anchorages and approach pier Q-1, for Bronx-Whitestone Bridge, to Frederick Snare Corp, 114 Liberty St., New York, **$1,893,558.** Bids June 8. Noted June 9, C.D.—June 17, E.N.-R.

N. Y., Hamlin—Village, constructing steel, concrete bridge and paving, relief forces, **$52,577. W.P.A.** funds allotted. Owner will purchase materials.

N. Y., Tonawanda—New York Central R. R. Co., J. W. Pfau, ch. engr., 466 Lexington Ave., New York, constructing grade crossing elimination on Ontario St., to C. B. Moon Co., 8700 Kinsman Rd., Cleveland, O. Est. **$200,000.** Noted Sept. 25, C.D.—Oct. 1, E.N.-R.

Bridges, etc. (Continued)

North Dakota—State Hy. Dpt., Bismarck, constructing underpass grade separation structure and approaches Tenth St., WPGM 68, Cass Co., to A. Guthrie Co., Inc., Closter St., St. Paul, Minn., **$257,983**; strip 10x6 ft. concrete box culvert, east of Powers Lake, S.A.P. 383C, 1375 Burke Co., to A. A. Schultz, Minot, **$3,086**. Bids June 4. Noted May 24, C.D.—May 27, E.N.-R.

Pennsylvania—See "Roads."

Pennsylvania—At office W. Van Dyke, secy. Hys., Harrisburg, rein.-con. deck I-beam bridge, traffic bound surfacing and approach grading, 3,058 ft. Route 27015, Sect. 1, Howe Twp., Forrest Co., to A. L. and R. J. Rupp, Kittanning, **$14,996**. Bids May 21, C.D.—Noted May 14, C.D.

Virginia—See "Roads."

Washington — State Hy. Dpt., Olympia, steel, concrete undercrossing in Snohomish Co., to L. Coluccio, 2226 3rd Ave., Seattle, **$71,725**. Bids June 7. Noted May 28, C.D., under "Roads."

Washington—State Hy. Dpt., Olympia, constructing concrete, steel, timber bridge in Everett, to T. Romano, Seattle, Wash., **$59,849**. Bids June 8. Noted May 28, C.D., under "Roads."

West Virginia—State Road Comn., Charleston, constructing substructure Fetterman overhead Crossing 1422, Taylor Co., to T. A. Loving & Co., Goldsboro, N. C., **$94,831**; constructing superstructure for same, to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., **$141,652**. Bids June 15. Noted June 8, C.D.—June 10, E.N.-R.

Wisconsin—State Hy. Comn., Madison, constructing bridge in Lincoln Co., to Wunderlich & Bleick, 509 East State St., Appleton, **$11,331**. Bids June 4. Noted May 21, C.D.—May 27, E.N.-R.

N. B., Millstream—Province of New Brunswick, constructing 100 ft. arch span rein.-con. bridge with approaches of lath and stone, to Mooney Constr. Co., 49 Canterbury St., St. John, **$25,000.**

STREETS AND ROADS

BIDS ASKED

Arizona—July 2, by State Hy. Comn., Phoenix, grading, draining, furnishing, placing select material, concrete paving, concrete pipe and concrete curbing and guttering, Flagstaff-Winslow Hy., F.A. 21, 1st Recon. (1937), A.F.E. 6670. T. S. O'Connell, state hy. engr.

Ariz., Grand Canyon — See "Contracts Awarded."

California—July 7, by State Hy. Comn., Sacramento, C. H. Purcell, state hy. engr., grading, plant mix surfacing, constructing timber bridge 1.8 mi. hy. between point ½ mi. and 3 mi. east of Petaluma, Sonoma Co.

Calif., San Leandro (br. Oakland) — See "Contracts Awarded."

Connecticut—June 28, by State Hy. Comn. at office J. A. Macdonald, state hy. comr., State Office Bldg., Hartford, rein.-con. paving 1,224 ft. traffic circle U. S. Route No. 1 and King's Hy. extension, Fairfield; alternate bids four paving types 6,060 ft. Whitney Ave., Hamden; rolled bank run gravel surfacing 6,605 ft. Durham Rd., Killingworth; 11,335 ft. Long Cove, Center, Groton and Avery Roads, Ledyard; 5,174 ft. Georges Hill and Purchases Brook Roads, Southbury; waterbound macadam paving 6,803 ft. Rimmon Rd., Seymour; 6,194 ft. Route 20, East Granby; 12,705 ft. Rd. "B" Sect. 1, Center Hill Rd., Barkhamsted; 13,476 ft. Rd. "B," Sect. 2, Barkhamsted and Hartland; bituminous macadam paving 1,210 ft. Water St., Torrington. To exceed $25,000.

Conn., New Hartford — See "Earthwork, Irrigation, Drainage and Waterways."

†Idaho — July 7, by Bureau Reclamation, Ashton, constructing relocated road at Grass Lake Reservoir, Upper Snake River Project, incl. 11,400 cu. yd. excav., about 38 mi. east of Ashton. R. F. Walter, Custom House, Denver, Colo., engr.

Indiana—June 29, by State Hy. Dpt., Indianapolis, furnishing and applying 6,411 tons rock asphalt on 21.86 mi. sundry roads in Seymour District, Jefferson, Washington and Scott Counties; 39,031 gal. liquid asphalt RC and 9,756 tons rock asphalt on 31.63 mi. sundry roads, LaPorte Hy. District, LaPorte, Lake, St. Joseph, Marshall, Carroll, Stark and Cass Counties; 7,560 tons rock asphalt on 28.44 mi. sundry roads in Wayne Hy. District, LaGrange, Wabash, Fulton, Grant, Elkhart, Kosciusko and Huntington Counties; 7,560 tons rock asphalt on 28.44 mi. sundry roads, in Fort Wayne Highway District, LaGrange, Wabash, Fulton, Grant, Elkhart, Kosclusko and Huntington Counties; 19,396 gal. liquid asphalt RC, furnished and applied, 4,848 tons rock asphalt on 16.53 mi. sundry roads, in Owen and Putnam Counties; 24,055 gal. liquid asphalt RC, furnished and applied and 6,014 tons rock asphalt on 22.78 mi. sundry roads in Henry, Randolph, Jay, Grant, Rush and Lafayette Counties; 7,585 tons rock asphalt on 26.38 mi. sundry roads in Vincennes District, Perry, Greene and Vanderburgh Counties; 19,201 gal. liquid asphalt RC and 4,850 tons rock asphalt on 16.33 mi. road in Seymour Hy. Dist., Monroe, Brown and Morgan Counties. M. R. Keefe, state hy. engr.

Iowa—June 30, by State Hy. Comn., Ames, paving 7.037 mi. Primary Rd. 14, from Primary Rd. 147 north and east into Charles City, Floyd Co., incl. 21,063 cu. yd. excav.; 2.795 mi. U. S. Rds. 52 and 67, northwest of Bellevue, FA 419-E, Jackson Co., 30,599 cu. yd. earth and 374 cu. yd. rock excav.; 0.316 mi. U. S. Roads 52 and 67, at C. M. St. P. & P. R. R. overpass northwest of Bellevue, Jackson Co., 1,004 cu. yd. excav.; grading 5.203 mi. relocation Primary Rd. 33, northeast of Sibley, P-736, Osceola Co., 140,905 cu. yd. excav. F. R. White, ch. engr.

Ia., Fort Madison—June 29, by Lee Co., A. G. Perks, aud., grading 27.878 mi. secondary roads, incl. 322,548 cu. yd. Class 2 excav. M. F. McFarland, co. engr.

Ia., Primghar—June 29, by O'Brien Co., I. R. Isenberg, aud., graveling 97.5 mi. maintenance graveling, incl. 6,900 cu. yd. excav, W. L. Anderson, co. engr.

Kentucky—July 9, by Dpt. Hys., Frankfort, medium type surfacing 11.302 mi. Allen-Lackey Rd., F.A. 237 CE-S, Floyd Co.; high type surfacing 7.147 mi. Nortonville-Greenville Rd., F.A. 164 ABCS, F.A. 240 AS, Hopkins Co.; 11.218 mi. Mayfield-Eggner's Ferry Rd., F.A. 235 A-S, Marshall Co.; 0.449 mi. Talbot St. and 5th St., Sturgis, F.A. 371 BS, Union Co.; low type surfacing 6.016 mi. Grayson-Greenup Rd., S.P. 28, Carter Co.; 2.714 mi. Sandy Hook-Grayson Rd., S.P. 28, Elliott Co., grading, draining and low type surfacing 4.663 mi. S.P. 930, Allen Co.; 5.61 mi. Princeton-Eddyville Rd., S.P. 318, Caldwell Co.; 10 mi. Hopkinsville-Greenville Rd., S.P. 10, Christian Co.; 1.988 mi. Burkesville-Tennessee Line Rd., S.P. 51, Cumberland Co.; grading, draining, low type surfacing, using timber bridges 2.837 mi. Cunningham-Milburn Rd., S.P. 485, Carlisle Co.; grading, draining 1.704 mi. Paintsville-West Liberty Rd., F.R. 113 A-G, Johnson Co.; 3.393 mi. Meta-Prestonsburg Rd., F.R. 110 A-G, Pike Co.

Louisiana — July 7, by State Hy. Comn., Baton Rouge, L. P. Abernathy, chn., H. B. Henderlite, state hy. engr., concrete paving 9.258 mi. Lake Providence-Arkansas State Line Hy., Project 2751-B, F.A.P. 47, reopened, East Carroll Parish.

Maryland—June 29, by State Roads Comn., Baltimore, improving grade and macadam surfacing 9.3 mi. Hagerstown-Sharpsburg Rd., Contr. W-216-1-611, Washington Co.; gravel paving 2.16 mi. Grace Chapel Rd., Contr. H-203-1-45, Harford Co.; stabilized earth paving 1.01 mi. Bittinger-Grantsville Rd., Contr. G-127-1-62, Garrett Co.; sheet asphalt on concrete surfacing, with center parkway 0.61 mi. along Wilkens Ave., Contr. BC-158-76, FAP, NRM 368 A, B and C, Baltimore City.

Nebraska—July 8, by Dpt. Road & Irrigation, Lincoln, bituminous material surfacing 7.8 mi. Highway 12, Dixon and Dakota Counties; pipe subdrains, stabilized soil base, bituminous mat surfacing 7.3 mi. Hy. 2, Otoe Co. A. C. Tilley, state hy. engr.

Nevada — July 1, by Directors Dpt. Hys., Carson City, constructing portion state highway system Humboldt Co. from point approximately 5 mi. west of Winnemucca to and through city of Winnemucca, Route 1, Sects. A1, A3, and A4. R. A. Allen, state hy. engr.

†Nev., Boulder City—July 7, by Bureau Reclamation, Boulder City, surfacing portion of Black Canyon Hy. and adjacent parking areas at Boulder Dam, about 7 mi. northeast of here. R. F. Walter, Custom House, Denver, Colo., dist. engr.

N. Y., Buffalo—July 1, by Dpt. P. Wks., City Hall, bituminous paving Porter Ave., Southampton, Mortimer, Goodrich, Eagle and Bond Sts., to exceed $25,000; repairing concrete sidewalks in all sections of city, to exceed $25,000.

†N. Y., Castle Point—July 6 (extended date), by Veterans' Bureau, Arlington Bldg., Wash., D. C., service road at U. S. Veterans' Hospital. Noted May 20, C.D.—May 27, E.N.-R.

N. Y., Geneva and **Canandaigua**—See "Contracts Awarded."

N. Y., Kenmore—Village, Municipal Bldg., taking bids bituminous resurfacing streets. To exceed $25,000.

N. Y., Kirkwood, Cochocton, Highland and **Delaware**—See "Contracts Awarded."

N. Y., Mount Morris—July 13, by Dpt Health, State Bldg., Albany, roads, walks, grading at State T.B. Hospital. Est. about $25,000. T. F. Farrell, State Bldg., Albany, engr.

N. Y., Niskayuna, Rotterdam and Cohoes—See "Contracts Awarded."

N. Y., Norwich—See "Contracts Awarded."

N. Y., Oneonta—July 6, by State Dpt. Health, State Bldg., Albany, roads, walks, grading at Homer Folks T.B. Hospital. Est. about $25,000 T. F. Farrell, State Bldg., Albany, engr.

N. Y., Rochester—See "Contracts Awarded."

N. Y., Russia—See "Contracts Awarded."

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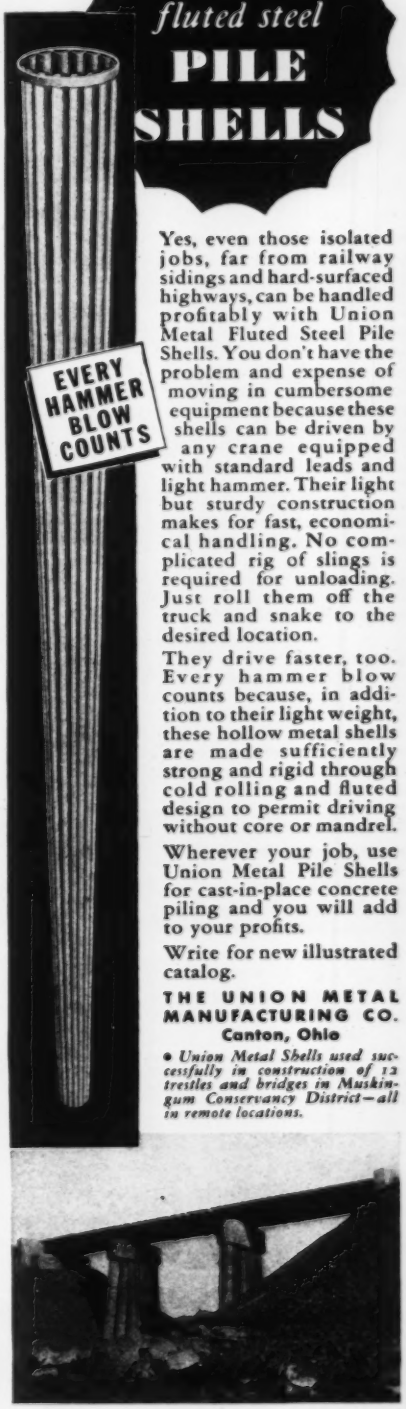

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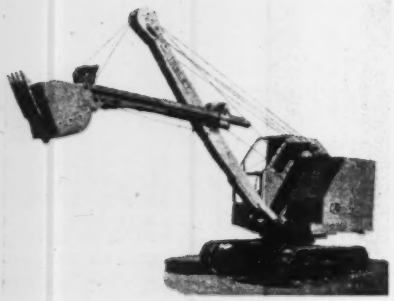

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Streets and Roads (Continued)

North Carolina—June 29, by State Hy. Dpt. & P. Wks. Comn., Raleigh **(P means Project)**, concrete paving 1.03 mi. P. 1422, in Halifax, Halifax Co. $25,000-$50,000; concrete paving and structures 0.89 mi. road 5 mi. east of Kinston, P. 2562, Lenoir Co. structures $75,000-$100,000, road $50,000-$75,000; grading, bituminous surface treating and structures, 9.16 mi. road between Bladenboro and Dublin, P. 3045 Bladen Co. road $100,000, structure $15,000-$25,000; 3.45 mi. Shallotte toward Old Dock, P. 3142, Brunswick Co. road $50,000-$75,000, structures $15,000-$25,000; 4.92 mi. Mooresville toward Mt. Ulla, P. 6381, Iredell Co. $50,000-$75,000; bituminous surface treating 0.67 mi. road near Charlotte Airport, P. 455, Mecklenburg Co. $15,000; 3.92 mi. P. 7688, west of Mt. Airy, Surry Co. $15,000-$25,000; grading, bituminous surfacing and structures 4.81 mi. P. 884, Rutherford Co., road $75,000-$100,000, structure $15,000-$25,000; bituminous surface treating 9.22 mi. Little Tennessee River to Swain Co. Line $25,000-$50,000; 9.22 mi. P. 9601, Macon Co. $25,000-$50,000; grading E. T. B. C. and structures, 1.31 mi. Wadesboro toward Carsons Oldfield, Betterment Sect. 4-5 18XE, Anson Co., under $15,000.

★**Ohio**—June 29, by J. J. Jaster, Jr., dir. State Hy. Dpt., Columbus, grading, drainage structures, concrete widening, resurfacing and paving, roadside improvement 3.102 mi. part Sect. B-2 and part Sect. A-3, Wapakoneta-St. Marys Rd., S.H. 165, S.R. 32, Auglaize Co., $135,373; grading, drainage structure, concrete paving, roadside improvement 1.932 mi. part Sect. M, Cincinnati-Chillicothe Rd., S.H. 8, U. S. Route 50, Hamilton Co., $285,516; grading, drainage structures, constructing concrete beam bridge HO-31-31, brick paving part Sect. G-1, G-2 and part Sect. B, Logan-Lancaster Rd., S.H. 360, S.R. 31, Hocking Co., $263,714; grading, drainage structures, traffic bound paving 2.6 mi. Sect. B, part Sect. Waterville-Toledo-Waterville Rd., S.H. 697, U. S. Route 24, Lucas Co., $132,812; grading, drainage structure, constructing concrete beam bridge SH-25-171 and concrete bridge with steel beams, SH-25-183, paving, concrete resurfacing and widening 3.52 mi. Sect. F, Sidney-Wapakoneta Rd., S.H. 164, U. S. Route 25, Shelby Co., $162,320; hot mixed, hot laid asphaltic widening and resurfacing 3.71 mi. part Sect. 1, Lima-Wapakoneta Rd., S.H. 126, U. S. Route 25, $43,854; 4.188 mi. Sects. P, G, M, L-1 and L, of Medina-Norwalk Rd., S.H. 291, S.R. 18, Medina Co., $57,894; 3.214 mi. Sects. C, D, and J, Columbus-Chillicothe Western Rd., S.H. 45, S.R. 104, and Sect. C and part Sect. T, Dayton-Chillicothe Rd., S.H. 29, U. S. Route 35, Ross Co., $44,471; hot mixed, hot laid asphaltic resurfacing 5.679 mi. part Sect. B-2, Sects. B-1 A, Savannah and Part Sect. C, Ashland-Norwalk Rd., S.H. 142, U. S. Route 250, Ashland Co., $57,585; 3.376 mi. part Sects. C-1 and C-2, part Sect. Powhatan Point-Ohio River Rd., S.H. 7, S.R. 7, Belmont Co., $34,522; bituminous macadam surface course paving 1.351 mi. part Sect. O, Jefferson-Andover Rd., S.H. 151, S.R. 85, Ashtabula Co., $15,332; waterbound macadam base course widening, bituminous macadam resurfacing 4.427 mi. Sect. 1, Hampden-Andover Rd., S.H. 475, and Sect. E, Jefferson-Andover Rd., S.H. 151, S.R. 85, U. S. Route 6, Ashtabula Co., $42,058; precoat bituminous coated aggregate paving 4.654 mi. part Sect. A, Kenton-Wapakoneta Rd., S.H. 166, S.R. 67, Auglaize Co., $31,148; precoat bituminous coated aggregate, sealed and covered widening and resurfacing 4.099 mi. Sect. C, Hicksville-Defiance Rd., S.H. 420, S.R. 18, Defiance Co., $60,571; grading, drainage structures, dismantling, moving and re-erecting existing 157 ft. 6 in. span 16 ft. roadway, high Pratt steel truss bridge on creosoted timber piling and rein.-con. cribbing abutments over Conotton Creek, traffic bound paving 0.965 mi. Mineral City-Roxford Rd., C.H. 400 F, Tuscarawas Co., $36,140; cold mixed, cold laid asphaltic concrete resurfacing 8.219 mi. Sects. D and E, Columbus-Marysville Rd., S.H. 48, S.R. 31, Union Co., $79,242.

O., Conneaut—See "Contracts Awarded."

Oklahoma—See "Contracts Awarded."

Pa., Mt. Carmel—See "Contracts Awarded."

Pa., Pittsburgh—July 1, by Allegheny Co., relocating 15,279 ft. Banksville Rd., west end. L. R. Schmidt, County Office Bldg., co. engr. (Correction—Bid date.) Noted June 17, C.D.

Pa., Wellsboro—See "Contracts Awarded."

★**Tex., Anahuac**—Chambers Co., G. Jackson, judge, soon takes bids permanent road improvement, alternate types paving, throughout county. $750,000. Bonds voted.

★**Tex., Conroe**—Montgomery Co., c/o County Engineering Branch, soon takes bids permanent road paving throughout county. $2,500,000. Bonds voted.

Tex., Henderson—July 1, by Rusk Co., c/o W. E. Youngblood, judge, grading, drainage structures, gravel base course surfacing 3.87 mi. Minden-Concord Rd., $50,000; grading 13.4 mi. Minden-Chapman Rd., $60,000; 5.65 mi. Laneville-Cushing Rd., $30,000. Noyes & Sandford, Henderson, engrs.

Tex., Kilgore—City takes bids latter part of month, alternate types paving ⅞ in. base with asphalt topping or 8 in. concrete or 8 in. concrete with 1½ in. asphalt topping 40 blocks business and residential streets. J. Harrell, Kilgore, engr.

Virginia—June 29, by State Hy. Dpt., Richmond, macadam surface treating 0.7 mi. Route 64, S.P. FA-1004-C3, Fed. Project FA-5340-D, Lee Co.; 1.3 mi. Route 11, S.P. FA-1143-D, Fed. Project FA-35-192, Rockbridge Co., constructing underpass, Route 220, S.P. WPGH 170-R1B1, Fed. Project WPGH 3741, Henry Co.

Wash., Spokane—See "Contracts Awarded."

Wisconsin—July 2, by State Hy. Comn. and Hy. Committees Adams, Barron, Dane, Juneau, LaCrosse and Vernon Counties, Madison, grading, drainage, concrete surfacing 3.979 mi. Marshfield-Stevens Point-Wausau (Sherry State East County Line) Rd., U. S. Hy. 10, F.A.P. 442-G, Wood Co., incl. 40,339 cu. yd. excav.; cold asphaltic concrete paving 3.314 mi. Wisconsin-Dells-Wisconsin Rapids (Friendship-Big Flats) Rd., S.T.H. 13 and 21, State Project 4758, Adams Co.; graveling or crushed stone paving 3.873 mi. Union Center-Elroy Rd., S.T.G. 80, State Project 4762 (Contract 2), Juneau Co.; crushed stone surfacing 8.887 mi. Boscobel-Fennimore-Dubuque (Potosi-Lancaster Sect.) Rd., Grant Co.; grading, drainage, graveling 1.441 mi. Wisconsin Memorial Hospital, S.T.H. 113 Rd., Town Rd. State Project 1638, Dane Co., 21,488 cu. yd. excav.; grading west approach 0.469 mi. Sparta LaCrosse Rd. (Mississippi River Bridge Approach West) Rd., LaCrosse Co., 215,720 cu. yd. common excav.; grading, draining 1.857 mi. Stoddard-LaCrosse Rd., S.T.H. 35, State Projects 5420 and 5422, Vernon and LaCrosse Counties, 51,867 cu. yd. and 8236 cu. yd. rock excav.; 9.979 mi. Ladysmith-Prentice (Catawba-Prentice) Rd., U.S.H. 8, F.A.P. 371, reop- and ext., Price Co., 369,947 cu. yd. borrow, 15,493 cu. yd. rock excav.; 8.465 mi. Turtle Lake-Spooner (Barronett-Shell Lake) Rd., U.S.H. 63, F.A.P. 39, Barron and Washburn Counties, 50,249 cu. yd. unclassified excav.; 1.586 mi. Hillsboro-LaFarge Rd., S.T.H. 82, State Project 5615, Vernon Co.; 2.236 mi. Viroqua-Genoa Rd., S.T.H. 56, State Project 5591, Vernon Co., 62,673 cu. yd. common and 33,018 cu. yd. rock excav.

Que., Verdun—See "Contracts Awarded."

LOW BIDDERS

★**California**—State Hy. Comn., Sacramento, C. H. Purcell, ch. hy. engr., June 16, grading, crusher run base and road mix surfacing 8.4 mi. hy. between Mountain House and Greenville, Alameda Co., from Granfield-Farrar & Carlin, 67 Hoff St., San Francisco, $848,193.

★**Pennsylvania** — At office W. Van Dyke, secy., hys., Harrisburg, June 11, rein.-con. paving, bituminous surface on flexible base, constructing six structures, 25,369 ft. Route 119, Sect. 6, Somerset Co., from Roberts Paving Co., Salisbury, **$639,016.** Noted May 26, C.D.—June 3, E.N.-R.

CONTRACTS AWARDED

†**Arizona** — Pub. Roads, Post Office Bldg., Phoenix, grading, drainage, placing subgrade surfacing 2.464 mi. road in Flagstaff-Clints Wells Natl. Forest Hy., Coconino Co., to Pearson & Dickerson, Tempe, **$45,125.** Bids June 1. Noted May 17, C.D.—May 20, E.N.-R.

†**Arizona** — Pub. Roads, New Post Office Bldg., Phoenix, bituminous treating 13.264 mi. road in Coconino Co., to Arizona Sand & Rock Co., P. O. Box 1522, Phoenix, **$28,822.** Bids June 8. Noted May 25, C.D.—May 27, E.N.-R.

Ariz., Grand Canyon—Conconino Co., c/o County Clerk, Flagstaff, constructing 144,444 sq. yd. oil surfaced runways, grading 2.5 mi. road, constructing 5 mi. barbed wire fence and 20 ft. earthen dam across dry wash, and constructing 1.5 mi. pipeline from water supply to airport, **W.P.A.** labor, **$71,405.** Work started.

California—L. H. Gibson, dist. engr. State Hy. Comn., 50 Higuera St., San Luis Obispo, applying road mix surface treatment and seal coat surfacing 7.5 mi. hy. between Santa Maria and Gary, etc., Santa Barbara and San Luis Obispo Counties, to Oil Fields Trucking Co., Box 751, Bakersfield, **$12,238.** Bids June 8. Noted June 1, C.D.

California—J. H. Skeggs, dist. engr. State Hy. Comn., State Bldg., San Francisco, applying armor coat and place crusher run base 2.4 mi. hy. between Sunol and Dublin, Alameda, to Piazza and Huntley, 296 North 6th St., San Jose, **$14,888.** Bids June 14. Noted **June 11, C.D.**

California—State Hy. Comn., Sacramento, grading, road mix on crusher run base surfacing 0.7 mi. hy. at China Gulch, Shasta Co., to L. J. Immell, 1031 Evelyn St., Berkeley, **$23,120;** road mix surfacing and applying seal coat on 16.1 mi. hy. between Feather River Inn and Bockwourth, Plumas Co., to Frederickson & Westbrook, P. O. Box 138, Lower Lake, **$37,014.** Bids June 9. Noted May 25, C.D.—May 27, E.N.-R.

California—State Hy. Comn., Sacramento, road mix surfacing 11.2 mi. hy. between Johnstonville and Lake Leavitt, etc., Lassen Co., to G. French, Jr., P. O. Box 107, Stockton, **$9,365.** Bids June 2. Noted May 27, C.D.

California—E. E. Wallace, dist. engr. State Hy. Comn., 1365 Harbor Blvd., San Diego, furnishing, applying liquid asphalt on 28.6 mi. hy. between Edom and point 3 mi. south of Coachella, etc., Riverside Co., to Paulsen

eets and Roads (Continued)
March, $275 Compton Ave., Los Angeles, 536. Bids June 8. Noted June 4 C.D.

Calif., Sacramento — T. F. Patterson, clk. Sacramento Co., resurfacing Del Paso Blvd., Teichert & Son, P. O. Box 1113, **$14,395**; Linda Blvd., to Heafey-Moore Co., 344 th St., Oakland, **$16,266.** Noted June 14, —June 17, E.N.-R.

Calif., San Leandro (br. Oakland)—E. F. tchins, city clk., furnishing, spreading oil street surfaces and/or other public works fiscal year ending June 30, 1938, own ces. Received no bids June 7. Noted ne 3.

★**Colorado**—State Hy. Dpt. Denver, gravel surfacing 13.187 mi. State Hy. 15, between onte Vista and Saguache, Saguache Co., to ard Knutson Constr. Co., Kansas City, Mo., 10,850; grading 2.897 mi. State Hy. 10, ween Wolf Creek Pass and Pagosa Springs, neral Co., to S. S. Magoffin Co., Englewood, 82,711. Bids June 11. Noted June 4, C.D.

Colorado—State Hy. Dpt., Denver, gravel rfacing 4.296 mi. hy. between Denver and lho Springs on State Hy. 2, Jefferson Co., —Hamilton & Gleason, Tramway Bldg., nver. **$198,085;** 19.236 mi. hy. between asburg and Anton, on State Hy. 192, ams and Arapahoe Counties, to M. E. Carlson, 4483 Newton St., Denver, **$246,503.** Bids ne 5, awarded June 7. Noted May 26, C.D.

Colorado — State Hy. Dpt., Denver, gravel rfacing 3.108 mi. hy. between Denver and lho Springs on State Hy. 2, Clear Creek d Jefferson Counties, to M. Wunderlich, fferson City, Mo., and Golden, Colo., **$212,-64.** Bids June 7, awarded June 8. Noted ay 26, C.D.

Colo., Denver—Dpt. Improvements & Parks City and County of Denver, widening, rbing, guttering, sidewalk, drainage, etc., adway Widening Impvt. Dist. 16, to Westrn Paving & Constr. Co., 5230 Washington t. **$33,755.** Bds June 7. Noted June 4, C.D.

†Fla., Pensacola — Yards & Docks, Navy Dpt., Wash., D. C., paving roads, Spec. 8482, Noonan Constr. Co., Pensacola, **$26,395.**

Indiana — State Hy. Comn., Indianapolis, rading and structures 3.647 mi. Road 58, Martin Co., to Highland Co., Inc., 644 Baxter ve., Louisville, Ky., **$54,396.** Est. $65,154. Bids June 8. Noted May 19, C.D.—May 27, E.N.-R.

Iowa—State Hy. Comn., Ames, improving 96 mi. U. S. Road 59, from Larabee North, O'Brien Co. Line FA-247-C and 6.575 mi. ame road FA 379-AB, to J. S. McLaughlin Sons, 710 Walnut St., Des Moines, **$78,109** nd **$177,968** respectively. Bids June 8, warded June 11. Noted June 1, C.D.—June E.N.-R.

Ia., Adel—Dallas Co., B. F. Pringey, aud., grading 13.8 mi. road, incl. 120,903 cu. yd. nd haul excav., 51,823 cu. yd. side cast excav. and 2,500 cu. yd. channel excav., to oth Constr. Co., Keystone, **$18,025;** graveling oad, to Kaser Constr. Co., Adel, $8,533. Awarded June 4.

Ia., Elkador—Bd. Supervs. grading roads, o J. P. Hurley, Epworth, **$28,180.**

Ia., Mount Pleasant — Henry Co., grading 1.75 mi. road, to J. B. Hannahs, West Point, $7,394. Bids May 29. Noted May 24, C.D.

★**Kentucky**—Dpt. Hys., Frankfort, concrete paving 6.002 mi. Winchester-Lexington Rd., Clark Co., to Louis Des Cognets & Co., Lexington, **$220,574***3.301 mi. Calhoun-Owensboro Rd., Daviess Co., to Ellis Kelly & Co., Owensboro, **$125,416***concrete wall slide correction Harlan-Pennington Gap Rd., S.F. 930-A, Harlan Co., to J. Sproles, Pineville, **$4,601***grading, drainage 1.704 mi. Paintsville-Blaine Rd., Johnson Co., to J. M. Caln & Co., Inc., Huntington, West Va., **$23,591** ***traffic bound limestone surfacing 1.124 mi. Barbourville-Manchester Rd., Knox Co., to O. V. Arnett, Berea, **$5,345***2.437 mi. Grays-Campbell School Rd., Knox Co., to D. L. Walker & Co., Lexington, **$7,508***2.746 mi. Brodhead-Eubank Rd., Rockcastle Co., to R. M. Robinson, Owensboro, **$6,640***bituminous surfacing 6.683 mi. London-Somerset Rd., Laurel Co., to Highland Co., Inc., Baxter St., Louisville, **$84,597***roadside improvement (construction), 6.431 mi. Paducah-Mayfield Rd., McCracken Co., to Louisville Nurseries, Shelbyville Rd., Louisville, **$2,747*** roadside improvement (planting), same road, to A. Wood Hardin, Louisville, **$2,346*** roadside improvement 0.195 mi. Madisonville-Sacramento Rd., McLean Co., to Corum Bros., Madisonville, **$718***rock asphalt surface repair 2 mi. Bowling Green-Horse Cave Rd., Warren Co., to H. F. Mathis, Bardstown, **$16,782.** Grand total $500,865. Bids June 11. Noted May 24, C.D.—May 27, E.N.-R.

Md., Baltimore—Bd. Awards, 7 in. concrete paving 5,385 sq. yd. streets in Paving Contr. 482, to Robertson Bros., 2525 Loch Raven Blvd., **$12,420.** Bids June 2. Noted May 25, C.D.—May 27, E.N.-R.

Massachusetts — Commonwealth of Massachusetts, Metropolitan Dist. Comn., W. E. Whittaker, secy. Parks Div., 20 Somerset St., Boston, bituminous macadam paving Quincy Shore Reservation, Quincy, to M. F. Gaddis, 6 Beacon St., Boston, **$18,800.** Noted June 8, C.D., under "Quincy." Concrete walks at Millbu Beach Boathouse, Dorchester, to C. & R. Constr. Co., 75 Bradeen St., Roslindale, **$15,000.** Bids June 10 and June 3, respectively, awarded June 11.

★**Mississippi**—E. D. Kenna, dir., State Hy. Comn., Jackson, paving 8.564 mi. hy. U. S. 51, Panola and Yalobusha Counties, to Harrison Eng. & Constr. Corp., Fairfax Bldg., Kansas City, Mo., **$181,659***17.823 mi. U. S. 61, Coahoma and Tunica Counties, to Forcum-James Constr. Co., Dyersburg, Tenn., **$367,106** ***asphaltic concrete paving 8.756 mi. hy. U. S. 45, Lowndes Co., to Central Paving & Constr. Co., 3615 Olive St., St. Louis, Mo. **$124,165***bridges and paving 8.429 mi. U. S. 49-W, Sunflower Co., and paving 8.535 mi. U. S. 49-E, Tallahatchie Co., to Burdine Constr. Co., Shaw, **$182,308** and **$178,153** respectively***grading, drainage, bridge 11.83 mi. Miss. 15, Pontotoc Co., to M. Harvey, Batesville, **$419,544***bridge 0.005 mi. U. S. 80, Lauderdale Co., to Newson Bros., Columbia, **$15,183.** Grand total $1,200,128. Bids June 8. Noted May 28 and June 1, C.D.

Missouri—State Hy. Comn., Jefferson City, to O. W. Knutson, 3527 Bway., Kansas City, grading and chat surfacing 3.314 mi. Barton Co., **$12,846;** grading 0.114 mi. FA 288F Route 24 South, **$990;** 0.17 mi. FA 337E1, same road, **$587;** 3.925 mi. Keystesville-Salisbury Rd., FA 796B, **$38,123;** 4.081 mi. FA 795A same road, **$71,150,** all foregoing Charlton Co. Grand total $123,696. Bids May 1. Noted Apr. 20, C.D.—Apr. 22, E.N.-R.

Neb., Sidney—City, bituminous mat resurfacing 52 blocks city streets to Inland Constr. Co., 3867 Leavenworth St., Omaha, **$40,960.**

New Hampshire—State Hy. Dpt., Concord. 3 in. bituminous macadam on broken stone surfacing 3.147 mi. Whittier Rd., Moultenboro, Carroll Co., and 4 in. on 12 in. gravel surfacing 2.593 mi. Old Railroad Rd., Lee, Strafford Co., to John Iafolla Constr. Co., Dedham, Mass., **$130,081** and **$37,813** respectively, est. $170,000 and $70,000 respectively. Bids June 11. Noted June 2 C.D.

New Jersey—E. D. Sterner, comr. State Hy. Comn., Trenton, improving 1.003 mi. Route 7, Sect. 1, Belleville Turnpike from Route 2 to Sawmill Creek, Bergen and Hudson Counties, to Bituminous Contg. Corp., 30 Church St., New York, **$97,898.** Bids June 14, Noted May 28, C.D.—June 3, E.N.-R.

New Mexico—G. F. Conroy, state hy. engr., Santa Fe, preparation base course surfacing, top course surfacing, oil processing and rock asphalt seal coat surfacing 11.036 mi. FAP 93C, Mod., Colfax and Union Counties, and 7.209 mi. FAP 93B, Mod., Colfax Co., to L. R. Allison, Albuquerque, **$44,757** and **$29,237** respectively***4.098 mi. Federal Lands Hy. Project 2D Mod., Valencia Co. and 5.689 mi. FAP 8B, Mod., Chaves Co., to Armstrong & Armstrong, Roswell, **$33,348** and **$25,181** respectively***grading, concrete sidewalks, and miscellaneous landscape work 1.702 mi. FAP 164 A, Reo Landscaping, Chaves Co., to Wheeler & Silver, Albuquerque, **$5,519.** Grand total $138,342. Bids June 11. Noted June 3, C.D.

†New Mexico—Pub. Roads, Coolidge Ariz., surfacing and oil processing 3 mi. Park Service Project, White Sands Natl. Monument, Otero Co., to Hayner & Burn, La Cruces, **$31,998.** Bids May 5.

New York—Dpt. P. Wks., Albany, improving 2.01 mi. Cayuta-Newfield Hy., Tompkins Co., to Lee Constr. Co., Oaks Corners, **$38,862.** Est. $47,642. Bids May 25. Noted May 6, C.D.—May 13, E.N.-R.

N. Y., Geneva and **Canandaigua** — Bd. Supervs. Ontario Co., Canandaigua, widening, graveling and bituminous paving 5 mi. South Pre-emption Rd., relief labor, **$18,421.** Owner may purchase materials. **W.P.A.** funds allotted.

N. Y., Kirkwood, Cochocton, Highland and **Delaware**—Towns grading, guttering, graveling 6.71 mi. "Farm-to-Market Roads," Sullivan Co., day labor. **$31,324. W.P.A.** funds allotted.

N. Y., New York—S. Levy, pres. Manhattan Boro, Municipal Bldg., repaving granite block area formerly occupied by surface car tracks, to E. T. Barry, 20 West 141st St., **$27,073.** Bids June 2. Noted May 24, C.D.—May 27, E.N.-R.

N. Y., Niskayuna, Rotterdam and **Cohoes**—Towns, guttering, graveling and bituminous surfacing roads and streets in Niskayuna, Rotterdam and Cohoes, relief labor. **$42,594. W.P.A.** funds allotted. Owner will purchase materials.

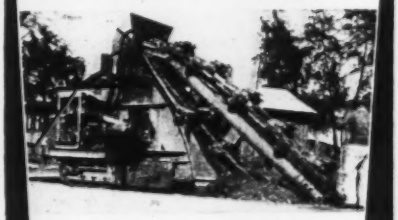
N. Y., Norwich—Bd. Supervs. Chenango Co., macadam paving 876 ft. concrete culverts, concrete slab bridge, 4.13 mi. road, **W.P.A.** labor, $100,341. $46,683 allotted by W.P.A. Owner will purchase materials and supervise.

N. Y., Rochester—City, curbing, bituminous surfacing Front St., own forces. To exceed **$25,000. Maturity at once.**

N. Y., Russia—Herkimer Co., constructing macadam paving 4 mi. road from Grant to Firths Corners, 10 ft., own forces, under supervision of W. Newman, co. hy. superv. **$50,000.**

Ohio—J. J. Jaster, Jr., dir. State Hy. Dpt., Columbus, improving 3.041 mi. Cuyahoga Co., to Cleveland Trinidad Paving Co., 700 Western Reserve Bldg., Cleveland, **$53,229***7.454 mi. Fayette Co., to A. W. Burns Constr. Co., 424 Woodland Ave., Columbus, **$29,998**

a typical Buckeye



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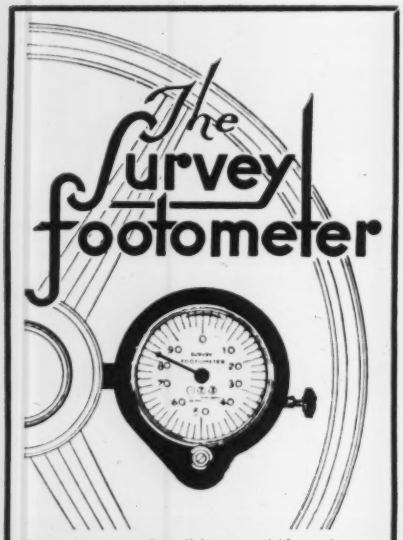

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Streets and Roads (Continued)

4.55 mi. Franklin Co., to B. F. Patterson, 4476 North High St., Columbus, **$62,539** 5.668 mi. Mahoning Co., to Johnson & Johnson, 250 Casterton Ave., Akron, **$90,610***** 10.988 mi. Marion Co., to Dunn & Roller Carey, **$80,171*****4.827 mi. Portage Co., to McCourt Constr. Co., 1000 Hazel St., Akron, **$83,900*****3.625 mi. Williams Co., to J. A. Elder, Bryan, **$33,400.** Grand total $433,847. Bids June 15. Noted June 8, C.D.—June 10, E.N.-R.

O., Conneaut — City, bituminous materials paving various dirt streets, **$60,000,** also construct concrete subway in Broad St., **$4,576,** day labor under supervision of T. F. Lininger, city engr. City will purchase materials and equipment.

O., Dayton — Montgomery Co., tar, asphalt emulsion resurfacing 200 mi. road incl. grading, reshaping surfaces, ditching and gravel topping, to F. Tejon, 6 Oakwood Ave., **$207,-303.** Est. $240,000. V. C. Smith, Court House, co. engr. Bids June 12, awarded June 17. Noted June 4, C.D.—June 10, E.N.-R.

Oklahoma — State Hy. Comn., Oklahoma City, asphalt surfacing 2 mi. U. S. Hy. 270, **$3,519;** 21 mi. U. S. Hy. 77, **$38,150;** and 19 mi. Hy. 66, **$80,710,** all in Oklahoma Co., by force account. Grand total $122,379. V. T. Moon, Capitol, Oklahoma City, engr.

Pennsylvania—At office W. Van Dyke, secy, Hys., Harrisburg, rein.-con. paving and rein.-con. arch on 1.08 mi. Route 48011, Sect. 1 and Route 48012, Sect. E, city of Bethlehem, Freemansburg Borough and Bethlehem Twp., Northampton Co., to D. M. Stoltzfus, Talmadge, **$110,857.** Bids Apr. 23. Noted Apr. 14, C.D.

Pennsylvania—At office W. Van Dyke, secy. Hys., Harrisburg, widening existing pavement with crushed stone base, and surfacing new base and existing pavement with bituminous surface 1.04 mi. Route 519, Centerville Borough, Washington Co., to Donora Constr. Co., Donora, **$33,713.** Bids May 7. Noted Apr. 28, C.D.

Pennsylvania—At office W. Van Dyke, secy. Hys., Harrisburg, smooth dressed granite block, bituminous surfacing, vitr. brick gutters on plain concrete base course surfacing 0.37 mi. Arch St., Sect. 2, city of Phila., Philadelphia Co., to Union Paving Co., 1227 North Broad St., Phila., **$73,274.** Bids May 21. Noted May 14, C.D.

Pennsylvania—At office W. Van Dyke, sec. Hys., Harrisburg, vitr. brick on plain concrete paving 0.46 mi. Walnut St., city of Phila., Philadelphia Co., to Joseph Salvucci & Co., 6601 Callowhill St., Phila., **$72,123.** Bids May 28. Noted May 20, C.D.

Pa., Merion—City, approximately 1,000 ft. Spec. E, paving over stone base, 1,600 ft. granite curbing and 800 ft. 8 in. terra cotta sewers, to McLaren Constr. Co., Ardmore.

Pa., Mt. Carmel — Mt. Carmel Borough, street improvements. **W.P.A.** labor. **$55,000.** H. Jones, Mt. Carmel, engr.

Pa., Wellsboro — Tioga Co., widening and building several miles gravel land stone base roads near Morris, **$14,725;** constructing 2 mi. gravel base highway and berms in Lawrence Twp., **$14,000;** grading, cinder base and oil top surface treating Antrim St., Wellsboro, **$8,402;** improving grounds, constructing stone base driveways, razing old buildings, and building 1 story, frame building at School in Gaines, **$7,605;** day labor under supervison of W. A. Smith, dist. **W.P.A.** dir. Grand total $44,732.

S. C., Gaffney—City, R. C. Swofford, mayor, surface treating 4½ mi. hy., incl. drainage, resetting manholes and catch basin frames, resetting curbing, headwalls, etc., to E. D. Sloan & Co., News Bldg., Greenville, **$24,000.** Ryan Eng. Co., Arcade Bldg., Columbia, engrs.

Tenn., Memphis—City, paving Firestone Blvd. formerly White Ave. between Thomas and Breedlive, to B. M. Hogan, 443 North Front St. **$53,105.**

Tex., Longview—City, c/o Bill N. Taylor, mgr., paving, storm and sanitary sewers, repairs to underpass and remodeling water filtration plant, to Austin Road Co., 1813 Clarence St., Dallas, **$117,044.** Est. $118,000. **P.W.A.** Bids May 4.

Tex., Sinton—W. B. Moss, judge San Patricio So., grading, drainage structures, caliche base course and asphalt surface treating 3.649 mi. County Rd. P.W.C. 1554-D, Sect. D, Rd. 10, and 2.723 mi. County Rd. P.W.C. 1884-D, Sect. B, Roads 11 and 12, to H. Page, Norwood Bldg., Austin, **$33,778** and **$38,565** respectively, est. $35,000 and $40,000 respectively. Bids June 4. Noted May 25, C.D.—May 27, E.N.-R.

Virginia—State Hy. Dpt., Richmond, improving Route 221, Floyd Co., to Cobb & Homewood, Inc., and W. W. Tuck & Son, Chapel Hill, N. C., **$29,531*****Route 11, Botetourt Co., to A. N. Campbell & Co., Inc., Lynchburg, Va., **$170,998*****Route 122, Bedford Co., to Perkins-Harnes Constr. Co., Inc., Blackstone, **$29,508*****Route 306 Warwick Co., to McDowall & Wood, Roanoke, **$54,858***** Route C-620, Warren Co., to Luck Constr. Corp., Rothesay Rd. & Belt Line, Richmond, **$24,257.** Grand total $309,152. Bids June 8. Noted June 1, C.D.—June 3, E.N.-R.

Virginia — State Hy. Dpt., Richmond, improving Route 250 Albermarle Co., to D. M. Houser, Stony Creek, **$45,176** ***Route 211, Fairfax Co., to W. H. Scott, Franklin, and S. E. Finley, Roanoke, **$238,637*****overpass and approaches Route C-644, Norfolk Co., to Hofheimer Concrete Corp., Norfolk, 444 East Main St., **$64,732.** Grand total $348,546. Bids June 15. Noted June 7, C.D.—June 10, E.N.-R.

Washington — State Hy. Dpt., Olympia, manufacturing and stockpiling mineral aggregates for bituminous surfacing 8 mi. roads in King Co., to Joslin & McAllister, North 303 Haven St., Spokane, **$18,146*****bituminous retread surfacing 71.1 mi. Grant and Douglas Counties, to Babler Bros., 2407 Northwest 28th St., Portland, Ore., **$72,407***** light bituminous surface treating 42.3 mi. Grays Harbor Co., to J. F. Forbes, Olympia, **$43,663*****manufacturing, stockpiling crushed stone for surfacing 31.1 mi. Okanogan Co., to M. E. Nelson Constr. Co., Inc., Tonasket, **$16,717*****grading, draining, surfacing, constructing steel, concrete under crossing in Snohomish Co., to L. Coluccio, Seattle, **$71,-724.** Grand total $222,111. Bids June 8. Noted May 28, C.D.

Wash., Spokane — City, grading, paving, 29th Ave., to C. A. Power, 27 8th St. **$23,-286;** asphaltic concrete resurfacing Bridge Ave. by force account, **$12,730.** Bids May 13. Noted May 4, C.D.

West Virginia—State Road Comn., Charleston, improving 0.239 mi. Project 159B and 1.317 mi. Project 159G, Braxton Co., to Parkersburg Constr. Co., Parkersburg, **$78,-865*****4.957 mi. Hansford-Standard Rd., Kanawha Co., to Abbot Constr. Co., Capitol & Piedmont Rd., Charleston, **$30,725*****Route 20, Upshur Co., to C. Morris, Bank of Commerce Bldg., Charleston, **$29,442*****7 mi. Mobie-Cassity Rd., Randolph Co., to Allied Products Co., Keith Bldg., Cleveland, O., **$20,402*****Judy Gap Rd., Pendleton Co., to Marsh & Corder, Philippi, **$4,712.** Grand total $164,146. Bids June 15. Noted June 8, C.D.—June 10, E.N.-R.

Wisconsin—State Hy. Comn., Madison, concrete surfacing 5.201 mi. roads in Iron Co., to Morris Martin Co., Berlin, **$133,995***** graveling 4.362 mi. Burnett Co., to J. S. Karlslyst, 210 North Page St., Stoughton, **$7,996*****grading, draining 10.939 mi. Lincoln Co., to J. O'Keefe, DePere, **$60,157*****4.362 mi. road in Burnett Co., to A. B. Lynch, C., 222 East Newton Ave., Milwaukee, **$43,697.** Grand total $245,845. Bids June 4. Noted May 21, C.D.—May 27, E.N.-R.

Wis., Milwaukee — Dpt. P. Wks., R. F. Stoelting, comr., improving North 35th St. from West Vliet St. to West Mineeke Ave., to Milwaukee Constr. Co., 2808 North Sherman Blvd. **$107,743.** Bids June 10, awarded June 11.

Wis., Winfield—Town, crushed stone surfacing 47,000 yd., to Interstate Constr. Co., Cobb, **$41,080.**

Wyo., Cheyenne — City Council, oil paving 100 blocks in northwest section of city, to A. H. Read Co., 706 West 19th St., $24,791. Est. $28,748. Bids May 17, Z. E. Sevison, Cheyenne, engr.

Que., Mount Royal—City, sheet asphalt and asphaltic concrete paving Chester Ave., to Raymond McDonnell & Co., Ltd., 2020 Union Ave., Montreal, **$50,000.**

Que., Verdun—City, constructing granolithic sidewalks on various streets, day labor, **$50,-000.** H. Hadley, City Hall, engr.

EARTHWORK, WATERWAYS

PROPOSED WORK

★ **Calif., San Diego**—City made plans 600x1,175 ft. rein.-con. pier at foot of 10th St., mole type, and dredging about same to a depth of 35 ft., involving 250,000 cu. yd. material. $1,823,550. Financing plans City $500,000 and W.P.A. $1,323,550. The work is expected to be carried on in sections over a period of years. If W.P.A. funds prove unavailable, the city intends to carry on as rapidly as may be possible to finance. J. Brennen, Harbor Office, engr.

★ **Calif., Santa Anna** — Orange Co., Court House, election July 27, to vote $2,500,-000 bonds as county's share of flood control program to be constructed by U. S. Engineers. Total est. $5,000,000. M. N. Thompson, c/o owner, engr.

★ **†Nebraska**—U. S. Eng., City Natl. Bank Bldg., Omaha, plans constructing 23,000 ft. dike, 1,000 ft. revetment and 5,000 ft. abatis in Missouri River between Monona and Black Bird Bend, near Macy, $450,000; 16,-000 ft. dikes, 6,000 ft. abitis in Missouri River between Dakota and Omandi Bends 4 mi. from Dakota City $350,000; and 9,000 ft. dikes, 7,000 ft. abatis and 2,000 ft. revetment between Browers and Glovers Point Bends 1 mi. from Homer, $230,000. Total $1,030,000. **Maturity soon.**

Neb., Hastings—Central Nebraska Public Power & Irrigation Dist., making plans constructing lateral canals to complete irrigation work. **Maturity early in summer.** C. E. Johnson, Hastings, ch. engr. and genl. mgr.

North Carolina—Pitts Co. (Greenville) and Edgecombe Co. (Tarboro), federal Government has offered to furnish $210,000 if the

Earthwork, etc. (Continued)

counties will furnish $90,000 to drain 60,000 acres in Conetoe Section. $300,000. Pitt Co. has already advanced $3,000 and Edgecombe $7,000 for preliminary work. Malaria Control Program, W. C. Hargrove, Tarboro, sec. bd. Comrs. Edgecombe Co. and J. G. Hoskins, Greenville, clk. to Pitt Co. Bd. C. E. White, Raleigh, asst. state dir.

Pa., Scranton—City, City Hall, plans **(a)** excavations, stone masonry walls and improvement of Lackawanna River, $41,312 **(b)** excavations, stone masonry walls, improvement of Lackawanna River and constructing new bridge at Remington Ave. $41,472; both W.P.A. projects proposed and are municipal flood control projects. City will purchase materials and equipment to cost $13,934 for both projects. Seeking W.P.A. approval for both projects. C. Schroeder, city engr.

Tex., Corpus Christi—City, c/o A. C. McNaughan, mayor, preliminary surveys for yacht basin. $125,000-$150,000. Filing application with P.W.A. for loan to finance construction.

BIDS ASKED

Conn., New Hartford—July 6, by Bd. Contr. & Supply, Metropolitan Dist., R. Dillon, clk., Hartford, resurfacing Nepaug Dam in New Hartford, incl. rein.-con. resurfacing 25,000 sq. ft. spillway section by use of reinforced gunite.

†D. C., Wash.—June 25, by Yards & Docks, Navy Dept., Wash., D. C., dredging, boathouse and pier improvement, Spec. 8507.

New Jersey—July 12, at office Board Commerce & Navigation, State House, Trenton, dredging 324,000 cu. yd. channel of Inland Waterway in 8 sections between Ocean City and City of Cape May, Cape May Co. V. Gelineau, dir.; adv. E.N.-R. June 24.

†N. Y., Brooklyn—July 9, by Treas. Dpt. at office Sup. Archt., Wash., D. C., dredging about 165,800 cu. yd. place measurement in Coney Island Creek.

†N. Y., Castleton—See "Contracts Awarded."

†O., Magnolia — July 10, by U. S. Eng., Zanesville, constructing levee protection works.

Pa., Mt. Carmel—See "Contracts Awarded."

†Tex., San Benito—International Boundary Comm., San Benito, taking bids levee embankment incl. 162 acres clearing and grubbing, 477,000 cu. yd. compacted embankment. J. L. Lytle, San Benito, engr.

†Virginia—June 29, by U. S. Eng., Norfolk, dredging 988,000 cu. yd. in Alligator River section.

†Virginia—June 30, by U. S. Eng., Norfolk, dredging 20,300 cu. yd. from Appomatox River.

†W. Va., Buffalo—July 16, by U. S. Eng., Huntington, dredging 9,000 cu. yd. in Kanawha River at Knob Shoal, near here.

Ont., Rondeau—July 7, by Secretary Dpt. P. Wks., Ottawa, reconstructing inner end of West Pier. $23,000. K. M. Cameron, Ottawa, engr.

Que., Sorel—July 2, by Secretary Dpt. P. Wks., Ottawa, Ont., strengthening elevator wharf by driving of steel sheet piling wall in front part Dock 1, 21,570 sq. ft. steel sheet piling in place. $20,000. K. M. Cameron, Ottawa, Ont., engr. Noted Apr. 14, C.D.—Apr. 22, E.N.-R.

CONTRACTS AWARDED

★**†Arizona** and **California**—Bureau Reclamation, Yuma, structures for All-American Canal, New River Crossing, Station 3633 to Station 3826, to Sharp & Fellows Contg. Co., Central Bldg., Los Angeles, Calif., **$269,-721**; furnishing 186 in. diam. welded plate steel pipe and appurtenances, to Southwest Welding & Mfg. Co., 3201 West Mission Rd., Alhambra, Calif., **$219,474.** Bids May 7. Noted Apr. 15, C.D.—Apr. 22, E.N.-R.

†Arkansas—U. S. Eng., Post Office Box 97, Memphis, Tenn., constructing 226,400 cu. yd. levee repair work, 12 mi. southwest of Cotton Plant on White River, to H. E. Culbertson, Swetland Bldg., Cleveland, O., **$31,017.** Bids June 1. Noted May 19, C.D.—May 27, E.N.-R.

†California—U. S. Eng., 208 Post Office Bldg., Sacramento, setting back, raising and strengthening existing levees and constructing new levee in Yolo and Sacramento Counties, to Haas-Doughty & Jones, and Marshall & Stacy, 1104 Merchants Exchange Bldg., San Francisco, **$115,590.** Bids May 5. Noted May 14, C.D.—May 20, E.N.-R.

Calif., Oakland—City Port Comn., Grove St. Pier, dredging 7,000 cu. yd. from Bay at Grove St. Pier, to American Dredging Co., 215 California St., San Francisco, **40c** per cu. yd. Bids May 24. Noted May 20, C.D.—May 27, E.N.-R.

†Calif., San Diego—Yards & Docks, Navy Dept., Wash., D. C., dredging, Spec. 8459, Item 1, to R. T. Dawson, San Diego, **$19,939** ***Item 3, to Gill Electrical Co., 922 Market St., **$3,300*****Item 5, to Newport Dredging Co., Wilmington, **$13,000.** Grand total $36,239.

†Fla., Pensacola—Yards & Docks, Navy Dept., Wash., D. C., dredging, Spec. 8493, to Murman Dredging Co., foot of Dauphin St., Mobile, Ala., **$9,046.**

†Idaho—Bureau Reclamation, Boise, Idaho, 1 direct pumping unit for installation in Succor Creek Pumping Plant, for Owyhee Irrigation Project, to Dayton-Dowd Co., Quincy, Ill., **$6,073.** Bids Apr. 26. Noted Apr. 29, C.D.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., W. F. Callahan, comr., 100 Nashua St., Boston, to Bay State Dredging & Contg. Co., 62 Condor St., East Boston, dredging 24,000 cu. yd. in Dorchester Bay at Savin Hill Yacht Club, Dorchester, **$10,820;** 16,000 cu. yd. in Lewis Bay at West Yarmouth, Yarmouth **$8,180;** 11,000 cu. yd. in West Bay, Barnstable, **$7,170*****to J. S. Packard Dredging Co., 1 Court St., Boston, 44,000 cu. yd. at Wollaston and Squantum Yacht Clubs, Quincy, **$22,920;** 12,000 cu. yd. on upstream side of Quincy-Weymouth Bridge, **$6,985.** Grand total $55,175. Bids June 4, awarded June 9. Noted June 2, C.D.

Mo., Cape Girardeau—Little River Drainage District, constructing about .29 mi. cleanout ditches and rebuilding levees in district, to Carl Erickson Estate Co., Bay City, Mich., at **6.44c.** per cu. yd. Bids May 17. Noted May 10, C.D.—May 13, E.N.-R.

†N. Y., Brooklyn—Yards & Docks, Navy Dpt., Wash., D. C., dredging at Brooklyn Navy Yard, Spec. 8315, to Morris & Cummings, Inc., 44 Whitehall St., New York, **$85,-000.**

†N. Y., Castleton — U. S. Eng., Albany, dredging 5,700 lin. ft. in Hudson River, own forces. To exceed **$15,000.**

★**N. Y., New York**—S. Levy, pres. Manhattan Boro, Municipal Bldg., bulkhead wall and sewer dredging and filling in East River Dr. from Grand to East 4th Sts., Contr. 3, and East River Dr. from East 4th to East 14th Sts., Contr. 4, to Frederick Snare, Inc., 114 Liberty St., **$1,200,509** and **$1,219,-713** respectively. Bids June 3. Noted June 4, C.D.—June 10, E.N.-R.

†Oregon — Bureau Reclamation, Denver, Colo., furnishing two 24 ft. by 16 ft. automatic radial gates for installation in spillway of Unity Dam, Burnt River Project, Spec. 919-D, to Valley Iron Wks., Yakima, Wash., **$7,000.** Bids May 13. Noted May 4, C.D.

Pa., Mt. Carmel — Mt. Carmel Borough, Mt. Carmel, creek covering, **$40,000;** sanitary sewers, Prince St., **$15,000. W.P.A.** labor. H. Jones, Mt. Carmel, engr.

†Texas — Bureau Reclamation, Denver, Colo., furnishing, delivering 2 bulkhead gate frames for diversion conduits at Marshall Ford Dam, Colorado River Project, Spec. 918-D, to St. Louis Structural Steel Co., East St. Louis, Ill., **$10,630.** Bids May 12. Noted May 4, C.D.

B. C., Fraser River—Dpt. P. Wks., Ottawa, Ont., dredging 400,000 cu. yd., to British Columbia Bridge & Dredging Co., Ltd., Vancouver, at **14⅞c.** per cu. yd., total **$59,600.** Est. $100,000. Bids June 10. Noted May 26, C.D.—June 3, E.N.-R.

Canada—Dpt. P. Wks., Ottawa, Ont., constructing St. Olivier wharf, St. Louis River, N. B., to J. P. Richard, St. Louis, N. B., **$5,879***** breakwater extension, Arisaig, N. S., to C. R. Macdonald & A. McGrae, Antigonish, N. S., **$6,713***dredging 20,920 cu. yd., Port Hope, Ont., to Russell Constr. Co., Ltd., Harbor Comm. Bldg., Toronto, Ont., at **20.75c.** per cu. yd., total **$5,607***wharf extension, Maisonins, Gaspe Co., Que., to A. Belanger, Sayabee, Que., **$8,235.** Grand total $26,434.

N. B., Ste. Stephen—Dpt. P. Wks., Ottawa, Ont., retaining wall and warehouse, to Belanger & Bertrand, L'Original, Que., **$54,590.** Est. $50,000. Bids June 8. Noted May 24, C.D.—May 27, E.N.-R.

N. S., South Side—Dpt. P. Wks., Ottawa, Ont., constructing breakwater, to T. P. Charleson, Laurention Club Bldg., Ottawa, Ont., **$17,483.** Est. $22,500. Bids June 7. Noted May 19, C.D.—May 27, E.N.-R.

Ontario—Dpt. P. Wks., Ottawa, dredging in Telegraph Narrows, to C. S. Boone Dredging & Constr. Co., Ltd., 330 Bay St., Toronto, at rental of plant and equipment at **$20.50** per hr. Est. $15,000. Noted June 4, C.D.

Que., Baie de Sable—Dpt. P. Wks., Ottawa, Ont., constructing wharf extension, to Dumont & D'Amours, Riviere de Loup Centre, **$26,914.** Est. $32,000. Bids June 7. Noted May 28, C.D.—June 3, E.N.-R.

Que., Cap Chat—Dpt. P. Wks., Ottawa, Ont., constructing deep water wharf, to F. Ross, Petite Vallee, **$33,193.** Est. $40,000. Bids June 10. Noted May 26, C.D.—June 3, E.N.-R.

UNCLASSIFIED

PROPOSED WORK

Ala., Auburn — STADIUM, etc. — Alabama Polytechnic Institute, Auburn, plans construcing stadium, field house and track. $100,000. Funds raised to construct same. Architect not appointed.

Arkansas—PIPE LINE—Lion Oil Refining Co., El Dorado, plans 15 mi. 8 in. steel pipe line from Eldora to Shuler Oil fields, Union Co.

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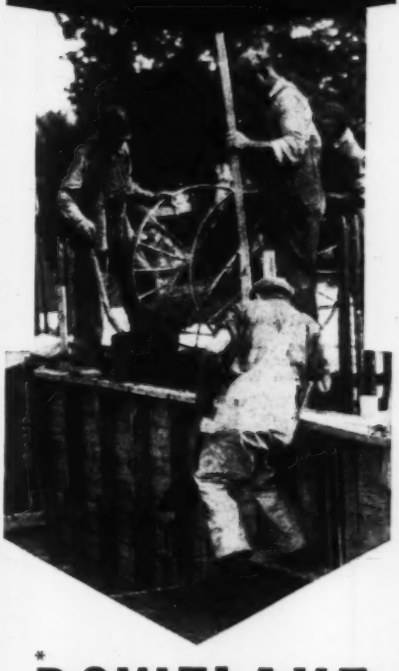

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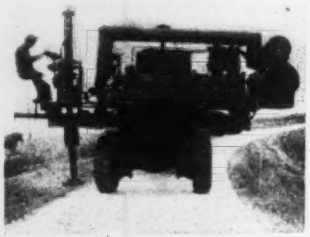

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Unclassified (Continued)

California — POWER DEVELOPMENT—Residents of rural areas in Plumas and Lassen Counties, not now receiving central station power, have organized and will seek federal funds to aid in financing construction of 200 mi. transmission and distribution lines to serve approxmately 700 customers. Power will be purchased at wholesale rates from existing utilities or generated by the co-operative and distributed to the members at cost. Surveys being made. A. Sickler, Alturas, engr.

Calif., Alturas—POWER DEVELOPMENT—Surprise Valley Electrification Corp., Alturas, surveys being completed to provide electric power for rural communities in Modoc and Lassen Counties, Calif., and Lake Co., Ore., will involve in the main a 900 hp. diesel-electric plant and approximately 350 mi. transmission and distribution lines. A Sickler, Alturas, engr.

Calif., San Francisco—WHARF, etc.—State, Harbor Comn., Ferry Bldg., completing plans connecting wharf and sheds at Piers 35 and 37. $150,000 or more. F. G. White, State Harbor Comn., Ferry Bldg., ch. engr.

Idaho, Sandpoint—RURAL ELECTRIFICATION — North Idaho Rural Electrical Rehabilitation Assn., plans 103 mi. power lines serving 445 homes in Bonner and Boundary Counties, $119,000. Rural Electrification Administration approved loan.

Ill., Maywood—SWIMMING POOL, etc.—City, City Hall, indefinitely postponed constructing rein.-con. swimming pool, bathhouse, etc., $39,000. $17,550 alloted by P.W.A. in 1936. Noted Dec. 2, C.D.—Dec. 10, E.N.-R.

Ind., Leavenworth—TOWN RELOCATION—Town Bd. plans relocating town from valley to bluff 400 ft. above Ohio River on 160 acre site, incl. bituminous street paving, sidewalks, curbing, guttering, deep well water and distribution system, sewerage system, town hall. $125,000. W.P.A. project. Matthews & Lennox, 534 Architects & Builders Bldg., Indianapolis, consult. engrs.

Iowa—TRANSMISSION LINES—Iowa Electric Light & Power Co., Security Bldg., Cedar Rapids, plans constructing 16.5 mi. transmission lines in Greene and Guthrie Counties, 0.5 mi. in Linn Co. and 12 mi. in Hancock Co. Est. about $35,000. Franchise granted by State Railroad Comn.

Iowa—TRANSMISSION LINE—Iowa Power & Light Co., 312 6th St., Des Moines, plans 5.25 mi. transmission lines in Dallas Co.; 16 mi. transmission lines in Marion Co. Est. about $25,000. Franchise granted by State Railroad Comn.

Ia., Cedar Rapids—PARK IMPROVEMENTS—City, plans constructing 3 large barns, new water system and tourist trailer camp, at Frontier Park. $75,000. $60,000 federal grant approved.

Ia., Centerville—TRANSMISSION LINES—Iowa Southern Utilities Co., plans constructing 11.75 mi. transmission lines in Washington Co. and 18.5 mi. lines in Jasper Co. Est. about $28,000. Franchise granted by State Railroad Comn.

Ia., Dubuque — TRANSMISSION LINES—Interstate Power Co., 1000 Main St., plans constructing 26 mi. transmission lines in Dubuque Co. $25,000. Franchise granted by State Railroad Comn.

Ia., Mason City—TRANSMISSION LINES—People's Gas & Electric Co., Mason City, plans constructing 56.5 mi. transmission lines in Cerro Gordo County, 3.75 mi. in Hancock Co. and 11 mi. in Worth Co. Est. about $65,000. Franchise granted by State Railroad Comn.

Kan., Iola — TRANSMISSION LINES—Co-operative Power & Light Co. plans constructing 65 mi. transmission lines. $65,000. Charter granted. O. R. Toman, Lincoln, Neb., engr.

Md., Baltimore — MARKET — Grant Food Market, c/o I. Cohen, 801 West Baltimore St., plans 1 story, 80x150 ft., brick, steel market, concrete found., Harford Rd. near Gibbons Ave. $35,000. Architect not appointed.

Mass., Greenfield — RADIO BROADCASTING STATION—J. W. Haigis, Franklin County Trust Co., Greenfield, plans radio broadcasting station, incl. studio, steel towers, brick transmitting building. Indefinite when project will advance. Engineer not appointed.

Minn., Windom—TRANSMISSION LINES—Cottonwood County Co-Operative Assn., F. E. Fuller, chn., plans constructing transmission lines in western part of Cottonwood Co. $25,000. E. C. Rodgers, co. agt., secy.

Miss., Corinth—STADIUM—Mississippi State College, plans by Stevens & Johnson, Starkville and Corinth, rein.-con. stadium, and 3 story dormitory and athletic building for Mississippi State College. $150,000.

Neb., Omaha—BARN—Ak-Sar-Ben, 106 City Hall, plans by G. Prinz, 354 Omaha Natl. Bank Bldg., constructing brick horse barn. $150,000. Noted June 14, C.D.

N. Y., Bronxville — PLAYGROUND — Bd. Educ. plans constructing playground adjacent to present school. To exceed $25,000. **Maturity soon.**

N. Y., Buffalo—HOCKEY RINK—City [illegible] Hall, plans constructing hockey rink at Broadway Auditorium, incl. purchasing and installing ice making machinery. $[illegible]. **Maturity soon.**

N. Y., Dobbs Ferry—WATERFRONT IMPROVEMENTS—Bd. Village Trustees [illegible] waterfront improvements, incl. grading, filling, constructing boat landing, creating recreation center, oil and sand on streets, $25,035. **Maturity soon.** J. J. Walker, mayor.

N. Y., Elmira—STREET CAR TRACK REMOVAL—New York State Electric & Gas Co., Elmira, plans remodeling street car tracks in all sections of city. To exceed $25,000. **Maturity soon.**

N. Y., Endicott—HANGAR—City of Binghamton and Village of Endicott bids in July constructing 100x125 ft. structural steel frame hangar, at Tri-Cities Airport. $35,000. Noted May 14, C.D.—May 20, E.N.R.

N. Y., Endicott—ELECTRIC SYSTEM—New York State Gas & Electric Co., 62 Hawley St., Binghamton, making surveys for electric illumination for Washington Ave. section in business district. To exceed $25,000.

N. Y., Niagara Falls—RAILROAD TRACK REMOVAL—City plans removing railroad tracks from city streets and relocating same. To exceed $100,000. May seek hearing before Public Serv. Comn.

N. Y., Rensselaer—RECREATIONAL FIELD—City plans converting Rensselaerwyck tract range into large recreational field, playground. To exceed $25,000. Work to be carried over period 5 years. **Maturity in near future.**

N. Y., Tuckahoe—RECREATION CENTER—Bd. Supervs. Westchester Co., White Plains, constructing recreational center playground and athletic fields. To exceed $25,000. Taxpayers voted against constructing stadium in connection with project. Noted Feb. 18, C.D.—Feb. 25, E.N.-R.

N. Y. Woodhull — OIL DEVELOPMENT—Southwestern Development Co., Port Allegany, Pa., plans developing deep-sand natural gas producing area near here, incl. drilling several 5,000 ft. wells, each requiring 3,000 ft. or more 6¼ in. pipe; unspecified tonnage, 10, 12 and 8 in. pipe. $100,000. **Maturity soon.** J. T. Craig, mgr.

North Carolina—STATE PRISON CAMPS—State Hy. and P. Wks. Comn., Raleigh, W. I. Craven, engr., plans constructing prison camps in 5 counties, incl. Columbus, Caswell, Alleghany and Mitchell Counties. Other location not definitely decided on. Each camp to accommodate 100 men each. To exceed $[illegible]000.

N. C., Charlotte — RURAL ELECTRIC LINES—Duke Power Co. plans constructing 40½ mi. lines to serve 176 customers known as Northwest Iradell extension, in northern and western section of Iradell Co. $50,000. C. E. Kizziah, Salisbury, asst. mgr.

N. C., Columbia—LOGGING RAILROAD—C. W. Pritchett Lumber Co., Columbia, plans Industrial Railroad, 2 mi. east of Newfoundland on County Rd. known as "Dillon Ridge" Rd., in Tyrell Co.

O., Cincinnati—BROADCASTING STATION—Stations WLW and WSAI, 1329 Arlington St., plans 5 story, 160x160 ft. broadcasting station, Warner and Chicasaw Sts. To exceed $150,000. **Maturity indefinite.** S. Hannaford & Sons, Dixie Terminal Bldg., archts.

O., Medina—ATHLETIC FIELD, etc.—Municipality plans athletic field and field house. $50,000. H. A. Fulton, 5716 Euclid Ave., Cleveland, archt.

Okla., Moore—PIPE LINE—Oklahoma Pipe Line Co., Natl. Bank Tulsa Bldg., Tulsa, made final plans constructing 9 mi. 6 in. and 3 mi. 8 in. oil pipe line, steel, from Moore to Oklahoma City. $65,000. Private plans.

Okla., Muskogee—DISTILLING TOWERS—Pure Oil Co., Muskogee, preliminary plans constructing 2 new refractory distilling towers at Muskogee Refinery. $50,000. Private plans.

Pa., Lock Haven—AIRPORT—Taylor Aircraft Co., Bradford, W. T. Piper, treas., and city of Lock Haven and Comrs. Clinton Co., plans developing modern airport on 100 acre tract, adjoining plant (acquired idle plant of Susquehanna Silk Mills). Architect not appointed.

Pa., Sabinsville—NATURAL GAS DEVELOPMENT—Godfrey L. Cabot, Inc., P. O. Box 561, Olean, N. Y., plans deep sand and natural gas development in Sabinsville gas field, incl. immediate drilling two 6,000 ft. wells, each requiring 5,000 ft. or more various size iron pipe, also plans connecting pipe lines, etc. $50,000. Owner will purchase materials soon. C. K. Whornton, c/o owner, engr.

S. D., Sioux Falls—RUNWAYS—City Municipal Airport made surveys four runways, hangar and administration building. $[illegible]000. Awaiting W.P.A. $135,000 grant. R. E. Brakstad, city engr.

Texas—RAILWAY LINE — Capt. J. Kennedy, et al, c/o Chamber of Commerce, Alice, tentative plans under way new railway line between San Angelo and Alice, to connect with Tex-Mex Railway at Alice and continue to Corpus Christi, preliminary plans for terminal at Alice and provide 60 acres land for erection of a land house, switching, etc.

Unclassified (Continued)

Tex., Houston — WHARF EXTENSIONS—Houston Compress Co., c/o A. Clayton, Cotton Exchange Bldg., Houston, plans 72x140 ft. wharf extenson, 18 ft. above mean low tide, Houston Ship Channel. To exceed $25,000.

Tex., Houston—WHARF — Shipside Contg., R. R. Olmsted, pres., M. & M. Bldg., plans 110x500 ft., concrete, steel warehouse terminal, the main wharf will provide loading area of 65,000 sq. ft. and additional wharfage 150x350 ft. will be constructed for the handling of pipe and steel, on a 3¼ acre site with 850 ft. frontage on Houston Ship Channel. Site procured.

Tex., McAllen—PIPE LINE—Standard Oil Co. of Texas, McAllen and Corpus Christi, preliminary plans, crude oil pipe line from a point in Brooks County to Corpus Christi. Engineer, c/o owner, engr.

Tex., Menard—GAS SYSTEM — City, P. Anderegg, mayor, plans municipal butane gas system, incl. distribution lines booster plant and machinery for complete plant. $80,000. J. W. Beretta, Inc., c/o National Bank of Commerce Bldg., San Antonio, engrs. Noted May 20, C.D.

Wash., East Sound—RURAL TRANSMISSION LINES — Orcas Power & Light Co., plans constructing 70 mi. power lines serving 200 families on Orcas Island. $87,000 REA loan approved.

Wash., Seattle — PIERS, etc. — Quaker Steamship Lines, lessee, Exchange Bldg., plans constructing pier and dock repairs, Connecticut St. Pier. To exceed $40,000.

Ont., Forest Hill—SWIMMING POOL, etc.—Governors of Upper Canada College, plans by Mather & Haldenby, 96 Bloor St. W., Toronto, swimming pool and gymnasium, Forest Hill. $75,000.

Ont., Toronto—BROADCASTING STATION—Canadian Broadcasting Co., Toronto, plans broadcasting station in vicinity of here. To exceed $150,000.

Quebec—BROADCASTING STATION—Canadian Broadcasting Co., Toronto, Ont., plans broadcasting station in Montreal or vicinity. To exceed $150,000.

Que., Verdun—WADING POOLS, etc.—H. Hadley, city engr., preparing plans constructing wading pools, kiosks, etc., in three public parks. $50,000.

BIDS ASKED

†**Calif., Mare Island**—DRY DOCK—July 28, by Yards & Docks, Navy Dpt., Wash., D. C., constructing dry dock, Spec. 8258.

Conn., Hartford — ADMINISTRATION BUILDING—July 6, by Bd. Contr. & Supply, Municipal Bldg., Hartford, 3 story, basement, 60x60 ft. and 25x30 ft., brick, stone administration building at Brainard Field Airport. $80,000. Part of $300,000 project. T. F. Foley, Hartford, archt. Noted Apr. 23, C.D. —Apr. 29, E.N.-R.

Georgia—HIGHWAY CROSSING SIGNAL—July 2, by State Hy. Bd., Atlanta, constructing highway crossing signal installation complete in place at the Georgia Railroad at Columbia St., Milledgeville; and at Georgia R. R. at Wheeles Rd., New Augusta.

N. Y., Brooklyn—DIVING POOLS—See "Contracts Awarded."

N. Y., Oneonta—SWIMMING POOL—June 28, by Bd. Park Comrs., City Hall, constructing rein.-con. swimming pool, in Wilver Park. Est. about $25,000.

N. Y., Syracuse—RAILROAD FACILITIES—June 30, by Central New York Regional Market Authority, State Tower Bldg., Syracuse, constructing railroad facilities and finished grading, walks, paving and fencing in connection with Central New York Regional Market, $126,500. H. L. Creal, secy. Noted Feb. 23, C.D.—Feb. 25, E.N.-R.

N. Y., Utica—SWIMMING POOL, etc.—See "Contracts Awarded."

Okla., Norman—ELECTRIC LINES—June 30, by Oklahoma Inter-County Rural Electric Co-Operative, c/o F. Sheff, Lexington, constructing 300 mi. power lines. $270,000. E. T. Archer, New England Bldg., Kansas City, Mo., engr. Noted May 5, C.D.—May 13, E.N.-R.

Pa., Schultzville—AIRPORT—See "Contracts Awarded."

Ont., Weston—SUBWAY—June 30, by T. T. Irving, ch. engr., Canadian National Rys., Union Station, Toronto, constructing subway on Brouns Line Hy. No. 27, mile 12.37 mi. Brampton subdivision between Weston and Walton, Ont.

†**V. I., St. Thomas** — AVIATION FIELD — June 28, by Yards & Docks, Navy Dpt., Wash., D. C., constructing aviation field and facilities at St. Thomas, Spec. 8433.

CONTRACTS AWARDED

†**Calif., San Francisco**—WHARF—U. S. Eng., 401 Custom House, removing and disposing 8,500 sq. ft. existing wharf and constructing 29,500 sq. ft. rein.-con. abutment and wharf, at Fort Baker, to Duncanson-Harrelson Co., DeYoung Bldg., **$143,616.** Est. $130,000 available. Bids May 28. Noted May 6, C.D.—May 20, E.N.-R.

★**Ill., Winchester**—ELECTRICAL SYSTEM—Illinois Rural Electric Co., T. R. Howe, pres., constructing about 622 mi. rural electric lines in Adams, Calhoun, Green, Morgan, Pike and Scott Counties, to A. S. Schulman, 527 South Dearborn St., Chicago, about **$635,000.** REA allotted $728,000 for transmission lines. Caldwell Eng. Co., Jacksonville, engrs., preparing plans for power generating plant for which REA has allotted $150,000.

Mo., Monticello—TRANSMISSION LINE—Lewis County Rural Electric Co-operative Assn., H. M. Ward, sec.-treas., Monticello, constructing 2nd section of about 100 mi. rural electric lines, to Stiers Bros. Constr. Co., 2944 Magazine St., St. Louis, **$73,000** using aluminum wire, $78,000 with copper wire. Subject REA approval. M. B. Messler, Palmyra, engr.

Mont., Huntley—POWER LINES—Yellowstone Valley Electrification Assn., constructing 135 mi. power lines, to Lease & Leighland, Great Falls, **$135,386.** J. M. Garrison, State Water Conservation Bd., Helena, engr. Noted May 26, C.D.

Mont., Sidney — RURAL TRANSMISSION LINES—Lower Yellowstone Rural Electric Assn. constructing rural transmission lines, to Manning & Noyes, Forsyth, **$88,992.** Est. $115,000. Sent to Washington for approval. Noted May 13, C.D.—May 20, E.N.-R.

Mont., Simms—POWER LINES—Sun River Electrification Assn., constructing 105 mi. power lines, to Tinling & Powell Co., 27 Main St., Spokane, Wash., **$90,577.** J. M. Garrison, State Water Conservation Bd., Helena, engr. Bids June 11. Noted May 18, C.D.—May 20, E.N.-R.

Mont., Whitehall—POWER LINES—Jefferson Valley Rural Electric Cooperative, constructing 40.37 mi. power lines, to Western Plumbing & Electric Co., Butte, **$35,582.** J. M. Garrison, State Water Conservation Bd., Helena, engr. Noted June 9, C.D.

Nebraska—TRANSMISSION LINES, etc.—Loup River Public Power & Irrigation Dist., Columbus, constructing Columbus Valley Transmission line, to Schneider Electric Wks., 1108 Farnum St., Omaha, **$13,800***** 1,005.5 ft. metal flumes for Genoa Headworks, to John Kerns Constr. Co., Omaha, **$20,340** ***furnishing insulators, to Victor Insulators, Inc., 50 Church St., New York, N. Y., **$22,542.** Bids May 7. Noted Apr. 21, C.D.—Apr. 29, E.N.-R.

N. Y., Brooklyn—DIVING POOLS, etc.—Dpt. Parks, Arsenal Bldg., Central Park, New York, constructing diving pool and playground, 694 Hopkinson Ave., relief day labor. To exceed **$25,000.** A. Embury, 2nd, c/o owner, archt. Owner will purchase materials. Noted May 27, C.D.—June 3, E.N.-R.

N. Y., Brooklyn — RAILROAD STRUCTURES—Bd. Transportation, J. H. Delaney, chn., 250 Hudson St., New York, altering railroad structure at Schermerhorn St. between Nevins St. and 3rd Ave., to Hillside Contg. Co., 53 Greene St., New York, **$11,850.** Bids May 7. Noted Apr 26, C.D.—Apr. 29, E.N.-R.

N. Y., Buffalo—PUBLIC BATHS—Dpt. P. Wks., City Hall, constructing public baths, 123 Church St., to Buffalo Constr. Co., 796 7th St.***electrical work, to Frey Electric Co., 2437 Bailey Ave.***heating, to H. M. Dechert, Inc., 181 Allen St.***plumbing, to W. Dechert & Son, 31 River St. Est. **$25,000** plus. Bids June 3. Noted May 25, C.D.—May 27, E.N.-R.

N. Y., New York—GREENHOUSES—Dpt. Parks, Arsenal Bldg., Central Park, reconstructing Greenhouses 1, 2, 3, 14 and 15 of Range 1, Contr. 5, and reconstructing Greenhouses 5, 7, 8, 9, 10, 11 and 12 of Range 1, Contr. 4, at New York Botanical Gardens, Bronx Park, to Lord & Burnham, 420 Lexington Ave., **$110,900.**

★**N. Y. New York**—SUBWAY—Bd. Transportation, J. H. Delaney, 250 Hudson St., constructing Route 101, Sect. 6, under 6th Ave. from West 9th to West 18th Sts., to Spencer, White & Prentis, Inc., 10 East 40th St., **$6,959,000.** Contractor sublet contract for 3,400 tons structural steel to American Bridge Co., 71 Bway. Bids May 11. Noted May 12, C.D.—May, 20, E.N.-R.

N. Y., Rochester—RAILROAD—See "Industrial Buildings," under "Proposed Work."

N. Y., Utica — SWIMMING POOL, etc.—City, constructing swimming pool and bath houses on Culver Ave., own forces. **W.P.A.** funds allotted. To exceed **$25,000. Maturity at once.** Owner will purchase materials. J. B. Shaw, city engr.

Ore., Portland—STORAGE TANKS—Texas Co., 135 East 42nd St., New York, bulk storage tanks containing 300 tons steel, to Steel Tank & Pipe Co., 518 Northeast Columbus Bldg.

Pa., Schultzville—AIRPORT—City of Scranton, City Hall, Scranton, C. F. Schroeder, city engr., completing extension and improvement of municipal airport, incl. north and south runway, 2,500 ft. long, 100 ft. wide and east and west runway, same size, both to hard-surfaced, removal of hill at southwest corner to permit further extension of field and construction of third runway, day labor. **W.P.A.** To exceed **$25,000.** City will purchase materials and equipment. Noted June 2, C.D. —June 10, E.N.-R.

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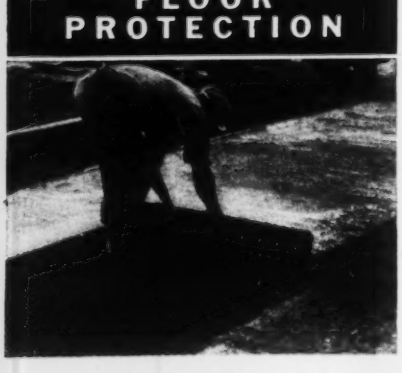

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Unclassified (Continued)

Wyo., Wheatland—TRANSMISSION LINES—Wheatland Rural Electric Assn., constructing 56.5 mi. transmission lines in Platte Co., to Donovan Constr. Co., 1725 Carroll Ave., St. Paul, Minn., **$49,863.** Est. $10,000. Subject to REA approval. Bids June 10. Noted June 3, C.D.

Canada—WHARF—See "Earthwork, Irrigation, Drainage, Waterways."

N. B., Saint John—SHED—Stewart Constr. Co., Ltd., general contractors, 7 Dufferin St., Sherbrooke, Que., steel work for rebuilding Sheds 1 and 2, for National Harbors Bd., Ottawa, Ont., to Saint John Dry Dock & Shipbuilding Co., Ltd., Saint John. Noted Apr. 28, C.D.—May 6, E.N.-R., under "Contracts Awarded."

Ontario—INTERMEDIATE AERODROMES—Dpt. Transport, Ottawa, developing intermediate aerodrome sites at Hearst, Vermillion Bay, Savant Lake and Kenora, to Hewitson Constr. Co., Walsh Block, Port Arthur. Est. about **$50,000.** G. L. McGee, Ottawa, engr.

Ont., Fort William—DOCK—Fort William Coal Dock Co., Ltd., reconstructing old dock at Mission River, to Canadian Dredge & Dock Co., Ltd., Harbor Commission Bldg., Toronto, about **$50,000.**

Ont., St. Thomas—GAS MAINS—Dominion Gas Co., 454 Talbot St., L. Burdick, supt., replacing present 4 in. mains with larger mains, probable 6 in. **$25,000.** Owner builds in late summer.

Que., Montreal—National Harbor Bd., Ottawa, Ont., repairing wharf, Sects. 38-40, Montreal Harbor, to Foundation Co. of Canada, Ltd., 1538 Sherbrooke St. W., **$37,187.** Bids June 1. Noted May 24, C.D.—May 7, E.N.-R.

†T. H., Hickam Field—ELECTRIC DISTRIBUTION SYSTEM—Con. Q. M., Fort Mason, constructing and completing electric distribution system at Hickam Field, to H. H. Walker, Inc., 1323 Venice Blvd., Los Angeles, Calif., **$191,300.** Bids May 18. Noted May 13, C.D.

MATERIALS, EQUIPMENT

PROPOSED WORK

MOTOR GRADER—**Fresno, Calif.**—H. S. Foster, city clk., soon takes bids furnishing power controlled motor grader with 12 ft. blade and scarifier, weight not less than 16,500 lbs.

AIR COMPRESSOR — **Oakland, Calif.** — W. W. Chappell, city clk., soon takes bids air compressor for Street Dpt.

FIRE FIGHTING EQUIPMENT—**Petaluma, Calif.**—City voted bonds for purchasing fire fighting equipment. $8,000. H. N. Jenks, 2701 Benvenue St., Berkeley, engr.

AIR COMPRESSOR—**Redding, Calif.**—State Purch. Agent, 319 State Capitol, Sacramento, plans purchasing one 160 cu. ft. actual delivery portable air compressor with spring mounted, pneumatic-tired trailer type mounting. Requisition 24,859.

ANGLE DOZER, etc. — **Redding, Calif.**—State Purchasing Agent, 319 State Capitol, Sacramento, plans purchasing 1 angle dozer or railbuilder to operate with double drum power unit. Requisition 24,904.

TANKS—**St. Louis, Mo.**—D. Consolino, 5254 Wilson Ave., applied to Bd. P. Serv. for permit to install three 1,000,000 gal. underground steel tanks for gasoline for automobile filling station at 4525 Hampton Ave.

TANKS—**St. Louis, Mo.**—Belle Hardt, 5760 Chippewa St., granted permit to install three 1,000 gal. underground steel tanks for gasoline automobile filling station at 5760 Chippewa St.

TANKS—**St. Louis, Mo.**—R. R. Schumacher, 3697 Olive St., applied to Bd. P. Serv. for permit to install two 550 gal. underground steel tanks for gasoline for automobile filling station, 3697 Olive St.

TANKS—**St. Louis, Mo.**—James Sullivan, 1203 North Taylor Ave., granted permit to install one 550 gal. and one 1,000 gal. underground steel tank for gasoline in automobile filling station, 1203 North Taylor Ave.

TANKS—**St. Louis, Mo.**—R. D. McIntire, 1711-19 Washington Ave., applied to Bd. P. Serv., for permit to install two 550 gal. underground steel tanks for gasoline in automobile filling station, 1711-19 Washington Ave.

GENERATING EQUIPMENT—**Albuquerque, N. M.**—Albuquerque Gas & Electric Co. making plans installing $300,000 worth new electric steam generating equipment. R. E. Thompson, c/o owner, engr.

STORAGE TANKS, etc.—**Albany, N. Y.**—Albany Scrap Iron Baling Co., North Ferry St., plans purchasing 1,000 and 2,000 gal. steel gasoline storage tanks and pumping equipment for proposed gasoline service station North Ferry St. (near old Erie Canal).

TANKS, etc.—**Albany, N. Y.**—City Ice & Fuel Co., 205 Park Ave., plans purchasing 1,000 gal. steel gasoline storage tanks and 3 pumps for service station at 154 Myrtle Ave., pending approval by Bd. Zoning Appeals, City Hall. To exceed $1,000.

TANKS, etc.—**Albany, N. Y.**—P. W. Mulderry, 452 North Pearl St., plans purchasing 550 gal. storage tanks and pumping equipment for garage and service station, 452 North Pearl St. To exceed $1,000.

TANKS—**Binghamton, N. Y.**—Mrs. J. S. Kelley, 44 Chestnut St., plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment for service station, LeRoy and Chestnut Sts. **Maturity soon.**

PARKING METERS—**Buffalo, N. Y.**—City, City Hall, plans purchasing 1,500 parking meters at once. $58 each. Noted Apr. 13, C.D.—Apr. 15, E.N.-R.

TANKS, etc.—**Buffalo, N. Y.**—Park Gardens Homes, Inc., Ellicott Square Bldg., plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment for service station, 1900 Hertel Ave. To exceed $1,000. Application for permit to build now before City Zoning Board.

TANKS, etc.—**Buffalo, N. Y.**—Pure Oil Co., Ellicott Sq., plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment, for gasoline service station, Elmwood Ave. and Tupper St. To exceed $1,000.

CALCIUM CHLORINE — **Elmsford, N. Y.** — Bd. Village Trustees, H. E. Fox, clk., plans purchasing quantity of calcium chloride for laying dust on village streets.

TANKS, etc.—**Ithaca, N. Y.**—Marion Bros., Inc., 225 South Cayuga St., plans purchasing 550 and 1,000 gal. storage tanks for gasoline and pumping equipment for service station at 225 South Cayuga St. To exceed $1,000.

TANKS, etc.—**Jamestown, N. Y.**—Standard Oil Co., Genesee Bldg., Buffalo, plans purchasing 550 and 1,000 gal. steel gasoline tanks and pumping equipment for proposed gasoline station at Main and 6th Sts. To exceed $1,000.

STREET SIGNS—**Mount Morris, N. Y.**—Bd. Village Trustees, Village Hall, plans purchasing, installing metal street signs throughout village. $2,500. G. B. Erbach, mayor.

TANKS—**Newburgh, N. Y.**—Natmic Realty Corp., 173 Liberty St., plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment for proposed gasoline service station, Front and 2nd Sts. **Maturity soon.**

TANKS, etc. — **Niagara Falls, N. Y.** — J. Myers, 197 East Falls St., Niagara Falls, plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment at gasoline service station, East Falls and 22nd Sts. To exceed $1,000. **Maturity soon.**

BOILER — **Syracuse, N. Y.** — O. S. Cane, purch. agt. Onondaga Co., County Court House, plans purchasing 150 lb. pressure boiler and appurtenances. $1,675. **Maturity in July.**

SAND, etc.—**Syracuse, N. Y.**—G. L. Noble, W.P.A. Procurement Officer, Old Post Office Bldg., soon takes bids furnishing sand, stone and cement for Ley Creek Sewage Disposal Plant project for Ley Creek Sewer Authority, Syracuse. To exceed $10,000.

TANKS, etc.—**Syracuse, Ogdensburg** and **Clinton, N. Y.**—Standard Oil Co. of New York, Genesee Bldg., Buffalo, plans purchasing 550 and 1,000 gal. steel gasoline storage tanks and pumping equipment for service stations at Erie Blvd. and Leavenworth St., Syracuse; at 427 Main St., Ogdensburg; and at 35 Utica St., Clinton. To exceed $1,000.

ASPHALT PLANT — **Yonkers, N. Y.** — City, City Hall, plans purchasing 450 sq. yd. per day asphalt plant for use in city streets. $7,500. C. Sheridan, city engr.

†CEMENT, etc.—**Charlotte (near Rochester), N. Y.**—U. S. Coast Guard, Milwaukee, Wis., soon takes bids cement, lumber, brick, electrical materials and overhead doors for use in constructing additions to U. S. Coast Guard station, by own forces. To exceed $1,000. **Maturity in July.**

TANK—**Fort Caswell (mail Southport), N. C.**—Caswell Corp., H. H. Thomas, member, plans purchasing and constructing tank, tower, pump house, power plant.

CLEANING MACHINE, etc.—**Canton, O.**—City plans purchasing one power sewer cleaning machine. 140 residential street lights. Council appropriated $1,260. R. A. Bauhof, dir. Pub. Serv.

AIR EJECTOR—**Cleveland, O.**—City, C. B. Patterson, purch. agt., plans purchasing air ejector for Division Water & Heat. F. H. Cover, 504 City Hall, engr.

AIR PUMPS—**Cleveland, O.**—City, C. B. Patterson, purch. agt., plans purchasing 2 steam jet air pumps for Division Light & Power.

COAL CHUTES, etc.—**Cleveland, O.**—City, C. B. Patterson, purch. agt., bids after July 8, replacing coal chutes, ash chutes, ash hopper chutes and coal spreaders at Division Pumping Station. F. H. Cover, 504 City Hall, engr.

COVERED CABLE — **Cleveland, O.** — City, C. B. Patterson, purch. agt., plans purchasing 25,000 ft. lead covered cable.

FIBRE CONDUIT, etc.—**Cleveland, O.**—City, C. B. Patterson, purch. agt., plans purchasing 60,000 ft. 4 in. fibre conduit and 5,000 ft. 4 in. conduit couplings.

HYDRANTS, etc.—**Cleveland, O.**—City, C. B. Patterson, purch. agt., plans purchasing

Materials, etc. (Continued)

one hundred 4 in. and twenty-five 6 in. fire hydrants and parts, 3,000 stop cock boxes and meters for Division Water & Heat.

SWITCH GEAR—**Cleveland, O.**—City, C. B. Patterson, purch. agt., soon takes bids 2 units of cubicle type switch gear for Division Light & Power.

VOLTAGE REGULATOR, etc. — **Cleveland, O.**—City, C. B. Patterson, purch. agt., plans purchasing one 200 k.v.a., 2,400 volt reg. and five 120 k.v.a. pole capacitors.

PUMPER TRUCK—**Holloway, O.**—Municipal Council plans purchasing motor driven fire pumper truck with hose, booster tank, etc. $4,000. **Maturity at once.**

WATER PIPE—**Piqua, O.**—City plans purchasing 54 tons 6 in. water pipe. F. R. Buechner, dir. Pub. Serv.

PUMPER—**Wooster, O.**—Bd. Control bids in about 60 days 750 gal. pumper with full equipment. $10,000.

SEWER PIPE — **Loyalsockville, Pa.** — Loyalsock Twp. Supervs., Kenmar, Williamsport, soon takes bids vitrified and tile sewer pipe and other materials for W.P.A. sewer in Kenmar Dist. $15,000. M. C. Krause, Court House, Williamsport, engr. Noted Nov. 19, C.D.—Nov. 26, E.N.-R., under "Sewerage and Waste Disposal."

STEEL TANKS — **Phila., Pa.** — Gulf Oil Corp., 151 Locust St., plans purchasing and installing several 500 and 1,000 gal. steel tanks, electric pumps, air compressor at service station to be built at 57th and Walnut Sts. $1,000. C. T. Marsh, Gulf Bldg., Pittsburgh, purch. agt.

DUMP TRUCKS—**Wilkes-Barre, Pa.**—City, W. P. Johns, city engr., City Hall, plans purchasing 6 dump trucks for use of Street Dpt. $10,000 or more. **Maturity soon.**

STEEL TANKS, etc. — **Wilkes-Barre, Pa.**—Petroleum Service Co. plans purchasing, installing 550 gal. steel tanks, electric pump and air compressor at service station to be established at 85 Parrish St. $1,000 or more.

BOOSTER PUMP—**Burlington, Ont.**—Municipality, soon in market for booster pump and other equipment. G. H. Power, Town Hall, engr.

DEEP WELL PUMP—**Norwich, Ont.**—Public Utilities Comn., F. C. Bishop, chn., interested in prices dual drive deep well pump (300 imperial gal. per min.), gasoline engine and electric motor in connection with new 10 in. well to be drilled at Norwich Junction.

BIDS ASKED

SPRAY TANK OILER—**Grass Valley, Calif.**—E. Deward, city clk., taking bids spray tank oiler, 400 gal. capacity, mounted on dual pneumatic trailer.

†HOISTS — **Oakland, Calif.** — Acting Supply Officer, U. S. Forest Service, Government Island, Oakland, taking bids three 1½ ton hoists, Bids 4842.

†PLUGS, etc.—**Oakland, Calif.**—Acting Supply Officer, U. S. Forest Service, Government House, Oakland, taking bids plugs, switches, tubes, etc. To exceed $1,000.

†SIPHONS, etc. — **Oakland, Calif.** — U. S. Forest Supply Service, Government Island, taking bids furnishing 3 siphons, sewage, 4 in. diam., 17 in. drawing depth, Bid 4878.

INSULATOR UNITS—**San Francisco, Calif.**—T. A. Brooks, city purch agt., City Hall, taking bids 2,510 suspension insulator units for Electric Power Bureau, Bid 1837.

†PREMIXED ASPHALT TOP COAT — **San Francisco, Calif.**—Con. Q.M., Fort Winfield Scott, San Francisco, taking bids 225 tons premixed asphalt top coat and 5 tons crushed rock or screenings, delivered to Fort Baker.

WIRE ROPE RAILING, etc.—**Connecticut**—June 28, by State Hy. Dpt., at office J. A. Macdonald, hy. comr., State Office Bldg., Hartford, furnishing 4,881 ft. wire rope railing on U. S. Route Cornwall; 10,388 ft. on U. S. Route 7, Sharon; constructing wooden bulkhead Toms and Hickey Property Plum Bank Creek, Old Saybrook.

WIRE — **Jacksonville, Fla.** — June 30, by City Comrs., 8,000 lb. No. 8 to four naught triple braided weatherproof wire both solid and stranded.

CRUSHED STONE, etc.—**Indiana**—June 29, by State Hy. Comn., State House, Indianapolis, 800-1,200 tons Size 8F (100% crushed), crushed stone, gravel or slag, f.o.b. Kingsbury. M. F. Keefe, Indianapolis, engr.

DIESEL ENGINE—**Bellevue, Ia.**—July 15, by Town Light Dpt., Diesel engine, generator plant, panel, piping, wiring, foundation for engine. $35,000. Young & Stanley, Muscatine, engrs. Noted Apr. 29, C.D. —May 6, E.N.-R., under "Public Buildings."

DIESEL ENGINE, etc. — **Lake Providence, La.**—July 1, by T. G. Biggs, mayor, furnishing, installing complete diesel engine generating set, deep well pump, crane, building and miscellaneous equipment for town.

†LUMBER—**Boston, Mass.**—June 28, by U. S. Eng., Custom House, furnishing long leaf No. 1 pine, or No. 1 Douglas fir, delivery Fitchburg.

†RIP RAP STONE—**Boston, Mass.**—June 28, by U. S. Eng., Custom House, furnishing rip rap stone for flood control work in Fitchburg.

†STEEL PIPE—**Boston, Mass.**—June 28, by U. S. Eng., Custom House, 1,400 ft. ¾ in. and 250 ft. 1½ in. welded steel, zinc coated pipe, standard weight welded steel pipe, delivery U. S. Engineer Sub-Officer, Fitchburg.

TRUCK—**Benson, Minn.**—July 6, by L. E. Engleson, aud. Swift Co., one 6-8 ton truck, gasoline or diesel powered fully equipped for plowing snow.

WATER METERS—**Marks, Miss.**—July 6, by Mayor and Bd. Aldermen, 75 new ⅝ x ¾ water meters with couplings for town.

WATER METERS—**Hickman Mills, Mo.**—June 29, by R. D. Berry, clk. Jackson Co. Public Water Dist., 300 water meters. $3,000.

PIPING, etc.—**Marshall, Mo.**—City, Bd. P Wks., R. C. Johnson, mgr., bids about July 8, piping, pumps and auxiliaries for municipal light and power plant. Est. about $33,000. P.W.A. project. Henrici-Lowry Eng. Co., 114 West 10th St., Kansas City, Mo., engrs.

†CYPRESS PILES, etc.—**Omaha, Neb.**—July 12, by U. S. Eng., City Natl. Bank Bldg., 5,000 round wood cypress piles f.o.b. point of origin; 1,000,000 ft. F.B.M. mattress lumber 1x4 in., surfaced 1 side and 1 edge, f.o.b. point origin or Blair, Neb., for Missouri River work.

†MATTRESS LUMBER — **Omaha, Neb.** — July 12, by U. S. Eng., City Natl. Bank Bldg., 1,000,000 ft. B.M. mattress lumber, 1x4 in., surfaced 1 side, 1 edge, for Missouri River work, f.o.b. point of origin or Mondamin.

†MATTRESS LUMBER, etc.—**Omaha, Neb.**—July 13, by U. S. Eng., City Natl. Bank Bldg., furnishing 1,500,000 ft. B.M. mattress lumber, 1x4 in., surfaced one side, one edge, f.o.b. point of origin or Wickham Spur, Ia.; 1,000,000 ft. B.M. mattress lumber, 1x4 in., surfaced one side, one edge, f.o.b. point of origin or Brownsville, Neb.; 5,000 round wood piles, f.o.b. point of origin, all above for Missouri River work.

ROAD MATERIALS—**Trenton, N. J.**—July 6, 7, and 8, by F. A. Brodesser, State Purchase Comr., asphaltic oil, asphaltic emulsion, tar, asphalt cement, joint filler, bituminous concrete, sheet asphalt, broken stone, screenings, dustless screenings, dirty screenings, slag screenings, slag and sand traffic paint, graphite paint, snow plow.

BITUMINOUS MATERIALS—**Albany, N. Y.**—Div. Standards & Purchase, Dpt. P. Wks., Capitol, Albany, taking bids furnishing large quantities materials for highway maintenance delivered to various points in state.

LUMBER, etc.—**New York, N. Y.**—June 29, by Bd. Transportation, J. H. Delaney, chn., 250 Hudson St., lumber, fir, maple, oak, pine, poplar, birch, oak hand rail bends, etc.; electrical supplies and fittings, conduits, etc.

PUMP and TANK — **Weldon, N. C.** — Bd. Comrs. Halifax Co., S. S. Norman, chn., in market for electric pump and tank for present county well to furnish water to town.

FIRE HOSE, etc.—**Cleveland, O.**—City, C. B. Patterson, purch. agt., bids about July 8 5,000 ft. 1½ in. double jacket rubber lined fire hose and 600 channel irons.

PIPE, etc.—**Waynesville, O.**—July 1, by Village, R. F. Hatfield, clk., c.i. pipe, c.i. Y branches, c.i. 45 degree bends, c.i. sleeves, gate valves, flanged ends, c.i. pipe increases, c.i. base elbows with floor supports, c.i. elbows, c.i. tees, c.i. automatic flax valve, corrugated iron pipe, c.i. pipe joint calking lead, concrete pipe, concrete stoppers, braided jute, concrete or vitr. sewer pipe joint, oak lumber, yellow lumber flooring, c.i. manhole rims and covers, service boxes with lockable lids, manhole steps, round steel reinforcing bars, sewage ejectors for two ejector stations, vertical submerged centrifugal non-clogging type with ejector basin covers, electric alternator equipment, all to fit pits at stations. M. P. Shepard, Harbard Bldg., Dayton, engr.

TERRACING MACHINES—**Oklahoma City, Okla.** — Bd. Affairs, L. M. Nichols, chn., Capitol, in market 77 terracing machines for soil conservation work.

HOOK AND LADDER TRUCK—**Erie, Pa.**—June 29, by City Council, M. J. Heunry, clk., 85 ft. motor driven tractor trailer, type hook and ladder truck, fully equipped. $10,000. A. N. Aitkin, city engr.

FIRE TRUCK—**Oil City, Pa.**—June 28, by City Council, C. S. Hetrick, city clk., furnishing alternate bids on **(a)** one 500 gal. triple combination pumper truck with 100 gal. booster tank and 250 ft. booster hose line, 28 ft. extension ladder, 14 ft. straight ladder, 12 ft. roof ladder and 10 ft. pole ladder, **(b)** combination chemical and hose truck with 35 gal. chemcal tank, same equipment as alternate "A." $6,500. B. B. Weber, city engr.

PARKING METERS—**Oil City, Pa.**—June 28, by City Council, 100 parking meters, $6,000. B. B. Weber, city engr. Noted June 2, C.D.—June 10, E.N.-R.

†CRANE, etc.—**Knoxville, Tenn.**—July 1, by Tennessee Valley Authority, Knoxville, designing, furnishing, fabricating and delivering 30 ton gantry crane and lifting beam for

from

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to

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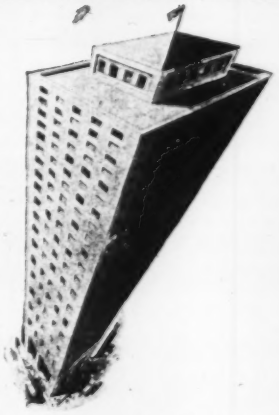

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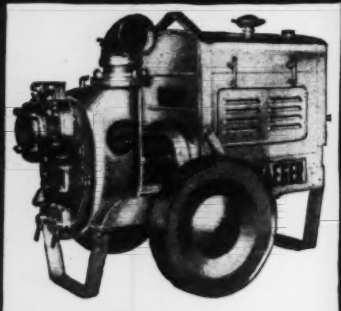

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Materials, etc. (Continued)

Pickwick Landing Power Plant. C. H. Garity, dir. Purchases.

†NETWORK ANALYZER—**Knoxville, Tenn.** — July 2, by Tennessee Valley Authority, Knoxville, designing, furnishing, fabricating, testing and delivering and supervising erection of alternating current network analyzer. C. H. Garity, dir. Purchases.

PIPE, etc.—**Ephrata, Wash.** — July 7, by Comrs. Grant Co., Court House, corrugated culvert pipe and bands as follows: 10 pipes 18 in. 16 ft. long; 10 pipes 18 in. 14 ft. long; 10 pipes 18 in. 12 ft. long; 16 pipes 24 in. 16 ft. long; six pipes 24 in. 12 ft. long; 15 pipes 18 in. connecting bands, six pipes 24 in. connecting bands. To exceed $1,000. A. B. Humason, Court House, co. engr.

FIRE TRUCK—**Garfield, Wash.**—July 6, by City, V. M. McDaniel, clk., 1½ ton fire truck equipped with pump and hose bed, 150 ft. 1 in. booster hose. To exceed $1,000.

CEMENT—**Seattle, Wash.**—July 1, by Bd. P. Wks., City Light Bldg., 275,000 to 300,000 bbl. cement for Ruby Dam. To exceed $1,000. J. D. Ross, city light supt.

CONTRACTS AWARDED

ROAD RIPPER, etc.—**Tucson, Ariz.**—Bd. Supervs. Pima Co., to Ronstadt Hardware Co., Tucson, one road ripper **$1,110**; two Gallion graders **$2,538**; one Gallion grader **$1,404** ***to Arizona Tractor & Equipment Co., 1402 North 19th Ave., Phoenix, one road builder **$2,045**; one road builder **$1,500**; and one power shovel **$9,400*****to Rollings Motor Co., Tucson, one heavy truck **$4,020*****to Crawford Tractor Co., 228 South 1st Ave., Phoenix, one wheel scraper **$568**; two wheel scrapers **$820**; two diesel driven tractors **$7,830*****to Robert Nicolai, Tucson, one air compressor **$3,250**; two jackhammers **$380*****to J. Knox Corbet Lumber & Hardware Co., Tucson, one concrete mixer **$1,029**. Grand total $35,094. Bids June 7. Noted June 3, C.D.

DISCONNECTING SWITCHES, etc.—**Los Angeles, Calif.**—Dpt. Water & Power, D. P. Nicklin, purch. agt., 207 South Bway., 18 each 600 amp. 34,500 volt disconnecting switches, Spec. 2302, to Delta Star Electric Co., 415 Wall St., **$1,845**; electric fusion welded steel pipe, to Western Pipe & Steel Co., 5717 Santa Fe Ave., **$3,195**. Bids June 3, awarded June 15. Noted May 26, C.D.

DISCONNECTING SWITCHES — **Los Angeles, Calif.**—D. P. Nicklin, purch. agt. Dpt. Water & Power, 207 South Bway., furnishing condenser tubes, Spec. 2306, to Ducommun Metals & Supply Co., 219 South Central Ave., **$10,497**. Bids June 4, awarded June 15.

OIL CIRCUIT BREAKERS, etc.—**Los Angeles, Calif.**—D. P. Nicklin, purch. agt. Dpt. Water & Power, 207 South Bway., oil circuit breakers and tank lowering device, Spec. 2298, to Kelman Electric & Mfg. Co., 1650 Naud St., **$81,608**. Bids June 1, awarded June 15. Noted May 26, C.D.

VENTURI TUBE THROAT LININGS—**Los Angeles, Calif.** — S. A. Joseph, purch agt. Metropolitan Water Dist., 306 West 3rd St., 4 brass throat linings for venturi tubes. Bid 83416, to Vernon Tool Co., 2749 East 37th St., Vernon, **$5,911**. Bids June 1, awarded June 10.

ASPHALT — **San Leandro, Calif.** — E. F. Hutchins, city clk., to Cairock Asphalt Co., foot of 47th Ave., Oakland, furnishing nautral rock asphalt as follows: less than 25 tons **$4.76**, 50 tons **$4.51**, 100 tons $4.27, 100 tons **$4.27**, over 100 tons 4.12; rock asphalt concrete, less than 25 tons **$4.23**, 50 tons **$3.93**; 100 tons **$3.63**, over 100 tons **$3.43**. Bids June 7. Noted June 3, C.D.

PIPE—**Colorado Springs, Colo.**—E. Mosley, city mgr., furnishing 7,765 ft. 16- to 24-in. c.i. pipe, to American Cast Iron Pipe Co., 2930 North 16th St., Birmingham, Ala., **$31,277**.

STORAGE TANK—**East Hartford, Conn.**—American Coal Co., Riverside Blvd., welded steel gasoline storage tank, to Chicago Bridge & Iron Wks., 37 West Van Buren St., Chicago, Ill., **$28,000**. Private plans.

CABLE—**Hartford, Conn.**—City, Bd. Contr. & Supply, Municipal Bldg., 60,000 ft. cable for Brainard Field, to Capitol Light & Supply Co., 39 Allyn St., **$9,409**. Bids May 19. Noted May 7, C.D.—May 13, E.N.-R.

CRUSHED STONE — **Indiana** — State Hy. Comn., Indianapolis, to J. W. Karch Stone Co., Bryant, O., furnishing 600-1,000 tons Size 8F (100% crushed), and 200-300 tons Size 11 (100% crushed) stone, **$1.50** per ton delivered to State Road 67; 1,000-1,500 tons Size 8, **$1.40** per ton delivered to State Road 26****to Erie Stone Co., 412 Illinois Bldg., Indianapolis, 600-800 tons Size 8F (100% crushed) and 200-300 tons Size 9 (100% crushed) at **$1.75** per ton, f.o.b. Union City ***to Mid-West Rock Products Co., 806 Majestic Bldg., Indianapolis, 300-500 tons Size 8 (crushed 35%) and 100-150 tons Size 9 (crushed 35%) at **$1.25** per ton***to American Aggregates Corp., Fort Jefferson; 1,500-2,000 tons Size 8 (crushed 35%) and 300-500 tons Size 9 (crushed 35%) **$1.25** per ton. Bids June 7, awarded June 10.

ROAD OIL, etc. — **Indiana** — State Hy. Comn., Indianapolis, to Seneca Petroleum Co., 439 West 33rd St., Chicago, Ill., applying 367,700 gal. road oil SC-1, 2 and 3, **6.23c.** per gal.; 107,700 gal. road oil SC-4, **6.43c.** per gal., both in rural sections, Seymour district; 325,000 gal. road oil SC-1, 2 and 3, in Laporte Sect. **5.73c. per gal.*****to C. E. Edington, Findlay, O., 226,100 gal. road oil SC-1, 2, 3 at **5.47c.** per gal.; and 122,000 gal. road oil SC-4, **5.94c.** per gal., both in Greenfield District*****to C. E. Dington, Findlay, O., 200,100 gal. road oil SC-1, 2, 3, at **5.47c.** per gal.; 95,000 gal. road oil SC-4, **5.94c.** per gal., both in Vincennes District*****to Breslin Const. Co., Breslin Bldg., Louisville, Ky., 254,100 gal. road oil SC-1, 2, 3, **6.12c.** per gal. and 191,200 gal. road oil SC-4 at **6.12c.** per gal. in Crawfordsville District. Bids June 9. Noted June 4, C.D.

BITUMINOUS ROLLERS—**Ames, Ia.**—State Hy. Comn., Ames, 20 highway bituminous rollers, to Royer Mfg. Co., Janesville, **$3,810**. Bids June 7, awarded June 8. Noted June 4, C.D.

HYDRANTS, etc.—**Boston, Mass.**—City, Supply Dpt., City Hall Annex 250,000 lb. Class "B" c.i. hydrants and gates, to Mechanics Iron Fdry Co., 38 Kemble St., Roxbury, **$17,500**. Bids June 2, awarded June 15.

SWITCHES, etc. — **Hastings, Neb.** — Central Nebraska Public Power & Irrigation Dist., G. E. Johnson, ch. engr. and genl. mgr., Hastings, furnishing, installing switches and auxiliary equipment for sub-stations, to Westinghouse Electric & Mfg. Co., 821 Telephone Bldg., Omaha, **$110,699**; furnishing transformers and auxiliary equipment, to General Electric Co., River Rd., Schenectady, N. Y., **$75,788**. Bids June 3. Noted May 27, C.D.

SLOW CURING OIL—**Bridgeton, N. J.**—Cumberland Co., slow curing oil and sand for county roads, to A. H. Lupton, Bridgeton, **$17,982**. Bids May 25, awarded June 9.

TAR, etc. — **Trenton, N. J.** — Frecholders Mercer Co., Trenton, 121,570 gal. tar or asphaltic oil, to Barrett Paving Co., 28 West State St., at **6.69c.** and **11c.** per gal. respectively, total **$14,746**. Bids June 15. Noted June 8, C.D.—June 10, E.N.-R.

CAST IRON PIPE—**Albany, N. Y.**—Dpt. P. Wks., State Bldg., Albany, c.i. pipe for culverts delivered to Hornell, to Central Fdry. Co., Bessemer, Ala., **$2,520**. Bids June 3.

CRUSHED STONE—**Albany, N. Y.**—State Dpt. P. Wks., State Bldg., 2,750 tons crushed stone for highway maintenance to various points in state, to General Crushed Stone Co., 506 Culter Bldg., Rochester, **$6,710**. Bids May 28. Noted May 25, C.D.

CRUSHED STONE—**Albany, N. Y.**—New York State Dpt. P. Wks., State Bldg., Albany, 500 tons crushed stone for highway maintenance delivered to Delaware Co., to Cushing Stone Co., Inc., 408 State St., Schenectady, **$1,325**. Bids May 6. Noted May 3, C.D.

CRUSHED STONE—**Albany, N. Y.**—Dpt. P. Wks., State Bldg., Albany, to LeRoy Lime & Crushed Stone Corp., LeRoy, 800 tons stone for highway improvements delivered to LeRoy at **$2.25** per ton; 650 tons delivered in Cattaraugus Co. **$2.15** per ton; and 635 tons delivered in Cattaraugus Co. **$2.25** per ton. Bids May 3. Noted Apr. 28, C.D.

CULVERT PIPE—**Albany, N. Y.**—State Dpt. P. Wks., Albany, to Empire State Culvert Corp., Groton, culvert pipe f.o.b. Elizabethtown, Luther, Melrose and South Schenectady **$619**; f.o.b. Fairmount **$553**; f.o.b. Lowville **$286*****to Good Roads Mchy. Co. of New York, Inc., 444 Bway., f.o.b. Elizabethtown, Luther, Melrose and South Schenectady **$606*****to Wheeling Corrugated Co., Wheeling, W. Va., culvert pipe, f.o.b. Johnstown and Canajoharie **$339**; f.o.b. Friendship **$161**; f.o.b. Oxford and Oneonta, **$3,104*****to Shelf Co., Elmira, culvert pipe, f.o.b. Warsaw, Geneseo, Pittsford, Maplewood and Canandaigua, **$2,455**; f.o.b. Poughkeepsie **$1,023**. Grand total $9,139. Bids Apr. 22. Noted Apr. 15, C.D.

PORTLAND CEMENT — **Albany, N. Y.** — State Dpt. P. Wks., State Bldg., 418 bbl. portland cement for culverts, etc., delivered to Hamburg, to Federal Portland Cement Co., Inc., Box 115, Buffalo, **$898**. Est. exceeds $1,000. Bids Apr. 29. Noted Apr. 20, C.D.—Apr. 22, E.N.-R.

CAST IRON PIPE—**New York, N. Y.**—Dpt. Purchase, Municipal Bldg., 1,400 tons c.i. pipe, to U. S. Pipe & Fdry. Co., Burlington, N. J., about **$80,000*****1,000 tons, to R. D. Wood & Co., Florence, N. J., about **$60,000*****600 tons, to Donoldson Iron Wks., Emaus, a., about **$35,000**. Grand total $175,000. Bids May 10. Noted May 3, C.D.—May 6, E.N.-R.

CAST IRON PIPE—**Syracuse, N. Y.**—G. L. Noble, W.P.A. Procurement Officer, Old Post Office Bldg., furnishing cast iron pipe for Ley Creek Sewer Project, for Ley Creek Sewer Authority, Syracuse, to Florence Pipe & Fdry. Co., Florence, N. J., **$1,428**. Bids May 27. Noted May 20, C.D.

STRUCTURAL STEEL, etc.—**North Carolina**—Div. Purchase & Contr., C. Waynick, dir., Raleigh, 42,750 lb. structural steel, 3,548 lb. reinforcing steel, f.o.b. Bridge 29, near Eleazer, to Carolina Steel & Iron Co., Greensboro, **$1,928**. Bids June 10. Noted June 4, C.D.

TIMBER PILES — **North Carolina** — Div. Purchase & Contr., C. Waynick, dir, Raleigh, 20, creosoted timber piles, 30 ft. long, 750 ft., 30 creosoted timber piles, 25 ft. long, 750

Materials, etc. (Continued)

ft., 35 creosoted timber piles, 20 ft. long, 750 ft., f.o.b. Sanford, to Taylor-Colquitt Co., Spartanburg, S. C., **$1,020**; 6,972 lb. reinforcing steel, f.o.b Spruce Pine, to Easterby & Mumaw, Builders Bldg., Charlotte, **$243**. Bids May 27.

PICK-UP TRUCKS—**Raleigh, N. C.**—Purchase & Contr., C. Waynick, dir., 15 closed cab pick-up trucks, f.o.b. Raleigh, to Sanders Motor Co., 329 South Blount St., **$6,930**. Bids May 27. Noted May 24, C.D.

†UNIFLOW ENGINE—**Wilmington, N. C.**—U. S. Eng., Wash., D. C., furnishing uniflow engine to be installed in Government Dredge "Henry Bacon," to Skinner Engine Co., 337 West 12 St., Erie, Pa., **$56,845.**

COLD ROLLED ASPHALT ROCK — **Oklahoma City, Okla.**—State Hy. Dpt., Capitol, Oklahoma City, 7,200 tons cold rolled rock asphalt for use on state highway maintenance work, to Southern Rock Asphalt Co., 519½ West Main St., **$28,440.** Est. $30,000. Awarded June 12.

STONE, etc.—**Pennsylvania**—U. S. Treas. Dpt., Harrisburg, 5,250 tons stone for Project 7-3182, Berks Co., to Reading Crushed Stone Co., Reading, **85c.** per ton. Bids May 17***375 tons and 1,200 tons slag, for Project 12-2533, to Buffalo Slag Co., Ellicot Sq., Buffalo, N. Y., **$1.88** and **$2.10** f.o.b. Erie. Bids May 19; 8,500 tons stone for Project 16-2962, Fayette Co., to New Castle Lime & Stone Co., New Castle, **$1.49.** Bids May 20***7,650 tons slag for P. 16-2961, Fayette Co., to France Slag Co., Donora, **$1.65.** Bids May 20. Noted May 14, C.D.

FLASHING LIGHT SIGNALS — **Texas** — G. Gilchrist, state hy. engr., Austin, furnishing materials for installation of electrically operated flashing light signal system, for Crossing Project WPGM 976-A and WGPM 976-E, on P. and S. F. R. R., Lamb Co. (delivered to railway warehouse at Amarillo), and for Project WGPM 985-P, at G. C. and S. F. Ry. Crossing, in Bosque Co. and Dist. (delivered to railway warehouse Cleburne), to Union Switch & Signal Co., Swissvale, Pa., **$22,495** and **$37,885** respectively. Bids May 14. Noted May 10, C.D.

STEEL RAILS, etc. — **Norfolk, Va.** — Seaboard Air Line, C. D. Faucette, ch. engr., 10,000 tons steel rails and fastenings to be used between Monroe, **N. C.**, and Atlanta and between Columbia, S. C., and Jacksonville, Fla., to Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala., and Bethlehem Steel Corp., Bethelehem, Pa., owner will lay rail by day labor and separate contracts. Est. exceeds **$350,000** for materials.

METAL FABRIC, etc. — **Madison, Wis.** — Treas. Dpt., Procurement Division, Madison, furnishing metal fabric to Greendale, to Concrete Eng. Co., 176 West Wisconsin Ave., Milwaukee, **$581***millwork to Milwaukee, to A. Lentz Co., 2156 North 70th St., Wauwatosa, **$2,731***fencing to River Falls, to T. Kupfer Fdry. & Iron Co., 629 East Mifflin St., Madison, **$251***chain link fence to Prairie du Chien, to Cyclone Fence Co., 733 North Van Buren St., Milwaukee, **$341***1,020 tons gravel to Milwaukee, to Greenfield Gravel Co., South 116th St. and West Morgan Ave., West Allis, **$1,204***192½ tons sand to Wauwatosa, to Krueger Sand & Gravel Co., South 38th St. and West Lincoln Ave., West Allis, **$227***260 tons stone to Wauwatosa, to H. G. Washechek, 4827 North Green Bay Ave., Milwaukee, **$325***paint to Milwaukee, to Rockford Paint Mfg. Co., Rockford, **$174***46 tons coal tar pitch for roofing to Greendale, to Western Tar Products Corp., 20 North Wacker St., Chicago, Ill., **$856***20 tons asphalt to West Allis, to Amulco Asphalts, Inc., 5432 West 67th St., Chicago, Ill., **$396***146 tons roofing gravel and 50 cu. yd. gravel to Greendale, to Drueckner-Kaestner Co., 1320 East Capitol Dr., Milwaukee, **$152** and **$88** respectively***40 square asphalt shingles to Ojibwa, to Superior Woodwork, Inc., Superior, **$326***200 ft. rein.-con. sewer pipe to Ashland, to Elk River Concrete Products Co., 752 Builders Exch. Bldg., Minneapolis, Minn., **$454***2,100 ft. copper water pipe and fittings to Greendale, to Roberts Brass Co., 306 East Lincoln Ave., Milwaukee, **$396** and **$31** respectively***45 cu. yd. sand to Cudahy, to R. H. Smith, 1753 North 75th St., Wauwatosa **$74.** Grand total $8,610. For 45 bbl. cement to Cudahy, to W. F. Luebke Co., 148 East Anderson Ave., Milwaukee***300 bbl. portland cement to West Allis, to Consumers Fuel & Supply Co., 4135 West State St., Milwaukee ***350 bbl. portland cement to Wauwatosa and 330 bbl. portland cement to Milwaukee, to J. J. Rees Lumber & Fuel Co., Waukesna ***100 bbls. portland cement to Odonah, to Ashland Lime, Salt & Cement Co., **Ashland.** Bids May 7, awarded May 5.

†BUILDING MATERIALS—**Milwaukee, Wis.**—National Park Service, Milwaukee, building materials, lumber, to Brittingham-Hixon Co., Baraboo, **$839**; sand, to Krueger Sand & Gravel Co., South 38th St. and West Lincoln Ave., West Allis, **$1,023.** Bids June 14, awarded June 14.

†PORTLAND CEMENT — **Milwaukee, Wis.** — U. S. Eng., Milwaukee, 775 bbl. portland cement, f.o.b. Two Rivers, to Huron Portland Cement Co., 161 West Wisconsin Ave., Milwaukee, at **$2.47,** discount 10/15 days. Bids June 8, awarded June 9. Noted June 4, C.D.

†REINFORCING STEEL, etc.—**Milwaukee, Wis.** — National Park Service, reinforcing steel, to Wauwatosa Fuel & Supply Co., 7700 Harwood Ave., Wauwatosa, **$3,934**; cement, to Cudahy Lumber & Cement Co., 5318 South Packard Ave., Cudahy, **$4,784.** Bids June 9, awarded June 9.

†ROPE, etc.—**Milwaukee, Wis.**—U. S. Eng., Milwaukee, manilla rope, to St. Louis Cordage Mills, St. Louis, Mo., **$4,209***boiler tubes, to Gibbs Steel Co., 338 South 17th St., Milwaukee, **$369***round white oak piles, to M. Lane, Twin Lakes, Mich., **$409.** Grand total $4,987. Awarded June 15. Noted June 4, C.D.

POWER GRADER—**Guelph, Ont.**—Wellington County Council, power grader, to General Supply Co., 347 Sorauren Ave., Toronto. W. Keith, Court House, engr. Noted May 21, C.D.

BRIDGE STEEL—**Alaska**—Alaska R. R. Co., P. Berryhill, ch. engr., Anchorage, Alaska, 89,000 lb. steel for 180 ft. bridge on Alaska R. R., to Isaacson Iron Wks., 2917 Marginal Way, Seattle, Wash., **$5,340.** Bids June 10, awarded June 10.

REPORTS FROM ABROAD

Australia, Canberra—Federal Government plans reconstructing 32 mi. railway incl. tunnels, 1 mi. long between Newnes andd Capertree Valley. $3,300,000 voted.

Ceylon, Kandy—State University Council making plans university building. $1,250,000.

China—Chinese Government making plans completing 460 mi. railroad for Hanchow-Chungking Railway.

East Africa, Kenya, Kisumu—The Kisumu Power & Distribution Co. preparing plans generation station, distribution lines, etc. $1,000,000.

England—Borough Housing Committee, **Clitheroe,** making plans housing on Siedall Ave., $500,000***Staffordshire Territorial Army Association, **Stoke-on-Trent,** making plans armory on Waterloo Rd., $600,000***Chippenham** Town Engineer preparing plans housing development on Greenway Rd., $530,000***Washington Chemical Co., Ltd., **Washington,** making plans extension to plant, $750,000*** Corporation Housing Committee, **Hull,** making plans constructing 202 houses on Marleborough Terrace, $625,000***Whiston** Rural District Council, in conjunction with T. Wood, plans constructing 624 houses on Bleak Hill, $1,500,000***Newcastle-on-Tyne** Municipality plans municipal building at Barras Bridge, $1,000,000. Plans ready in late autumn***Corporation Housing Committee, **Wolverhampton,** making plans housing construction, $750,000***Corporation Bd. Educ., **Gloucester,** making plans technical college, $51,080***Urban District Council, **Halteprice,** making plans deep drainage scheme***Carlisle** Town Engineer invites bids for supply mechanical street sweeper and collector*** Urban District Council, **Wescott,** making plans sewerage scheme, $475,000***H. Bann, town clk., **Rochdale,** taking bids supply electric high tension and low tension paper insulated and lead covered cable for year***Coventry** Town Engineer preparing plans extending gas works carbonizing plant, $511,925 voted *** Corporation Housing Committee, **Stoke-on-Trent,** making plans 388 houses on Vivian and Hampton Roads, $850,000 *** **Rotherham** Borough Engineer, preparing plans waterworks plant, 10,000,000 gal. per day capacity***Sheffield** City Council votes $2,500,000 for additional housing erection during 1937***Newbury** Town Engineer interested in prices of gas meters *** Calico Printers Association, Ltd., St. James Building, Oxford St., **Manchester,** making plans printworks extension and will also purchase new machinery***Corporation Housing Committee, **Coventry,** making plans 1,000 houses on Corley Stonelgh Estate, $2,223,410. Plans ready in July***E. H. Appleton, Milton House, Birmingham Rd., **Great Barr,** preparing plans theatre, stores and car park, $600,000***Hattrell & Wortley, archts., 1 Queens Rd., **Coventry,** preparing plans extension for factory for Bolton Paul Aircraft Co., Ltd., $600,000***W. and T. R. Milburn, 17 Fawcett St., **Sunderland,** taking bids this month, hospital for Lanchester Joint Hospital Bd., $630,000***Corporation Housing Committee, **Bath,** making plans 594 houses on various sites, $1,500,000. Plans ready in August***Corporation Education Committee, **Birmingham,** making plans Senior and Junior High Schools at Sheldon and Perry Bar, $583,350 voted***Surrey Education Committee, **Guilford,** votes $729,530 for constructing technical institute addition*** Main Sewerage Bd., **Perrypont,** making plans sewer reconstruction, $1,050,000***Bolton** Town Engineer preparing plans new technical college on Manchester Rd., $1,320,000. Plans ready in August***Rural District Council, **Wolverley,** preparing plans sewerage scheme, $500,000***Bradford** Town Council making plans new transformer stations, $604,110 voted, and in market for switchgear, $71,525***Barrow Halmatite Steel Co., Ltd., **Barrow,** preparing plans developing Cumberland iron ore mines, $1,000,000***Wrathnall & Blackshaw, Queens Bldg., **Stockport,** preparing plans electricity station for Urban District Council of Romily, $500,000***Newcastle-on-Tyne** Municipality votes to con-

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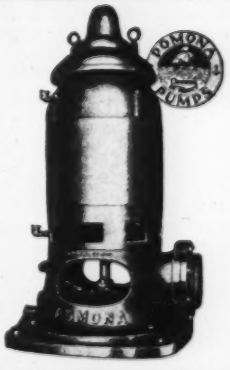

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Reports From Abroad (Continued)

struct public abbatoir, $1,500,000. Plans ready in July***Darlington Town Electrical Engineer preparing plans extensions to generating plant, $1,175,000 voted***P. E. Day, of Mineral Products, Ltd., **Cornwall,** making plans developing tin deposits in Royal Poiberro Area, $500,000***Bethill Town Engineer preparing plans extensions to gas works, incl. erection of vertical retorts, purifiers, etc. ***June 28, by A. M. Olivier, town clerk, **Newcastle-on-Tyne,** supplying and installing mechanical stokers to boilers at public institutions *** Education Committee, **Bolton,** constructing college to Tarran Industries, Ltd., Ryde Ave., Hull, $1,250,000***Bd. Educ. Committee, **Durham,** constructing school, by day labor, $593,976. F. Willey, archt., 34 Old Elvet Rd., in charge***Philpot Cinema Circuit, Ltd., **Coventry,** c/o J. D. Griffiths, 3 The Quadrant, Warwick Rd., constructing theatre, to Philpot Bros., Ltd., 116 Much Park St., Coventry, $550,000***Hattrell & Wortley, 1 Queens Rd., **Coventry,** reconstructing hippodrome, to E. Harrico & Son, Ltd., Cope St., Coventry, $580,000***Tynemouth Town Council, constructing 248 houses at North Shields, to S. Pye, Ltd., South Shields, $580,317***June 30, by W. M. Coupe, clk. Urban District Council, **Tyldesley,** pumping station construction and supply 3 pumps with electrical motors, automatic float controlled switchgear, valves, pipes and appurtenances.

England—Worksop Gas Co., Ltd., **Worksop,** plans by E. Hutchison, extensions to gas plant and installing carbureted water gas plant, etc.***G. H. Alexander Mchy., Ltd., 84 Coleshill St., **Birmingham,** in market for metal working machinery, such as lathes, shapers, planers, millers, etc., as used in engineering workshop and wants all information of any machine tools available for export, 20% custom duty. Cable address "Viking Birmingham"***Corporation Housing Committee, **Liverpool,** plans by L. H. Keay, Red House, Allerton Rd., 5,000 house erection during 1937-38, $12,500,000 plus roads, sewers, etc.***Corporation Housing Committee, **Liverpool,** constructing 300 houses at Speke, to W. J. Simms, Sons & Cooke, Ltd., 3 Weekday Cross, Nottingham, $640,000***Liverpool Exchange Co. and Real Property & Finance Corp., Ltd., Dale St., **Liverpool,** constructing 10 story block on Exchange St., to Humphrey, Ltd., London, $5,000,000.

England, Liverpool—Spillers Co., Ltd., Cunard Bldg., making plans 3 concrete elevators at Vernon Mills. $1,500,000.

England, London — Young & Hall, 17 Southampton St., E. C., preparing plans addition to Royal Eye Hospital, $550,000. Bids this month***British Broadcasting Corp., preparing plans station at Stark Point, $1,000,000***F. E. Bromige, archt., Imperial House, Regent Street West, preparing plans theatres and stores at Ruslip for H. D. Cinemas, Ltd., $750,000***Lyons, Isreal & Elsom, archts., 3 Paul's Bakehouse Court, E. C., preparing plans factory for S. O. Harrison & Sons, Ltd., West Ferry Rd., $500,000 ***Connel, Ward & Lucas, archts., 25 Grosvenor Place, S. W., preparing plans studio addition, at Littleton Park, for Sound City, Ltd., $580,000***P. D. Hepworth, archt., 7 Gray's Inn Pl., W. C., preparing plans civic center, for Borough of Walthamstow, $1,118,950 available***S. Warwick, archt., 4 Cockspur St. S.W., preparing plans factory at Stonebridge Park for Celotex, Ltd., $1,500,000 *** Great Western Railway of Brazil, Ltd., South Pl., E. C., preparing plans for reconstruction, $3,000,000 appropriated *** London, Midland & Southern Ry., preparing plans warehouse building at Birmingham, $1,250,000***C. J. Curtis & Co., Ltd., 1 Regent St., S. W., making plans 200 houses $580,000 ***G. Coles, archt., 40 Craven St., W. C., preparing plans superitheatre, stores and car park, for Kay Brothers, Ltd., $600,000 *** Balfour, Beatty & Co., 66 Ocean St., E. C., preparing plans hydro-lectric works for Scottish Power Co., Ltd., $2,000,000***Hoare & Wheeler, archts., 1 Portman St. West, preparing plans hydro-electric works for Army & Air Forces Assn. $600,000.

Irish Free State, Dublin—City Engineering drawing up plans for waterworks scheme at Poulphonca. Tentative est. $4,480,000.

Figi, Suva—Emperor Mining Co., making plans constructing plant to treat 16,000 tons oxidized ore per month, $850,000; and will purchase machinery, etc., to value of $480,000***Loloma Mining Co. making plans constructing plant to treat 2,000 tons sulphide-telluride ore per month $400,000 and to purchase machinery to value of $225,000.

Germany, Hamburg — Municipality Hamburg plans constructing docks and monument quay. To exceed $1,000,000.

Germany, Hamburg — National Socialist Party, Hamburg and German Government, Berlin, plan constructing 60 story office building. To exceed $20,000,000.

Jamaica—Tate & Lyle, Ltd., making plans central factory for sugar refinery, $500,000 ***Colonial Government, **Kingston,** preparing plans constructing botanical garden, racetrack and agricultural fairs building at Montego Bay, constructing deep water pier, and further development of port, $1,500,000.

Mexico, Tamaulipas—Ohio Oil Co., Findlay, O., and 17 South Glenwood Ave., Columbus, O., plans constructing oil and gas development, drilling, etc., at Ciudad Mier Oil field. To exceed $100,000.

Nicaragua, Managua — Government of Nicaragua, Managua, Dpt. P. Wks., plans radio broadcasting station, near here. To exceed $150,000.

Palestine, Tel Aviv — Palestine Electric Corp. making plans constructing 2nd power house to be equipped with 2 turbines each 12,000 kw. capacity and addition high tension transmission lines, $1,250,00. Municipality voted $500,000 for muncipal roads by day labor.

Panama, David—Government of Panama, Panama City, takes bids Sept. 6, on granting concession to build and operate tourist hotel at David, with certain tax limitations and free import of some materials. To exceed $200,000.

★**Panama, Panama City**—J. B. Crofton, Los Angeles, plans by W. D. McAllister, 1700 West 8th St., Los Angeles, Calif., constructing 250 room hotel. $1,000,000.

Scotland—Corporation Housing Committee, **Ayr,** making plans constructing houses at Thorney Flats. $500,000***Corporation Housing Committee, **Campbellton,** making plans 315 houses at Mill Knowl, $800,000***Aberdeen Picture Palaces, Ltd., **Aberdeen** making plans theatre at Palladium Circus, $550,000 ***Valentine & Sons, Kingsway, **Dundee,** erecting printworks, to J. B. Hay & Co., Ltd., South Tay St., Dundee, $535,000.

Scotland—Lanarkshire Steel Co., **Glasgow,** making plans works extensions, $1,000,000*** Modern Investment Co., Ltd., **Dundee,** preparing plans 420 house erection on Sighthill Farm, Calder Rd. $950,000***Trussed Concrete Steel Co., Ltd., **Motherwell,** purchased site at Brandon Bridge for plant construction, $750,000***Corporation Education Committee, **Edinburgh,** votes $595,000 for constructing intermediate school and cooking centre at Leith ***Lanarkshire County Council, **Lesmahagow,** voted $1,155,750 for reconstructing Cameronside Toll Rd., by day labor***His Majesty's Office of Works, **Glasgow,** constructing government office building on Calton Hill, to Jackson, Brown & Co., Ltd., 102 Bath St., $2,000,000*** Weddell & Inglis, archts., 216 Bath St., **Glasgow,** erecting 9 story hotel on Sauchiehall St., to Trussed Concrete Steel Co., Ltd., Horseferry Rd., S.W., London, England, $1,250,000.

Scotland, Glasgow — County Council of Argyle, plans rein.-con. bridge at Kilmaronaig $625,000 and approaches $125,000.

Siam, Bangkok—Ministry of Interior making plans generating plant of diesel engine type. $900,000. Bids to be called in August.

South Africa, Johannesburg—Anglo-American Corp. of South Africa Ltd., Stock Exchange, plans by F. Lorne, Montague Pl., Bedford Square W.C., London, England, commercial building. $1,000,000.

Sumatra—Royal Dutch Shell Petroleum Co., Amsterdam, Holland, or c/o Shell Petroleum Corp., 50 West 50th St., New York, N. Y., plans constructing oil development and exploration, at mouth Soengli Besitang River. To exceed $150,000.

Uruguay, Montevideo — The Montevideo Waterworks Co., Ltd., 52 Moorgate St., London, England, have reached an agreement with Uruguayan Government whereby company undertakes to expend on extending mains to specified areas $200,000 during 1937, and like amount during 1938 and 1939 and $150,000 for 2 years following. N.B. Dickson, O.B.E., genl. mgr.

Uruguay, Montevideo — July 19, by State Electricity, Supply & Telephone Administration, supplying 37,000 kilogs of bare copper conductors, electrolytic copper wire for overhead high tension transmission lines and hardened copper wire for telephone lines*** July 20, for supplying 15,000 kilogs of galvanized iron wire No. 12 of 2.22 mm in coils of 25 kilogs. net each.

PUBLIC BUILDINGS

PROPOSED WORK

Calif., Campbell — Campbell Union High School Dist. voted bonds for high school units. $150,000.

†Calif., Livermore—Veterans' Bureau, Arlington Bldg., Wash., D. C., rejected bids May 11, constructing infirmary ward building and connecting corridors and elevator at U. S. Veterans' Hospital. Noted Mar. 29, C.D.—Apr. 1, E.N.-R

Calif., Pomona — Pomona Bd. Educ., Pomona, election July 20, to vote $295,000 bonds to finance construction new school San Antonio site, $120,000; new building Hamilton site, $135,000; alterations Washington School, $15,000 and purchase land $25,000. Architect not appointed.

Calif., Watsonville — Watsonville Hospital, Inc., plans rein.-con. hospital, Brewington Tract. $150,000. Architect not appointed.

Conn., Bethel—Town, School Bd., plans by Philip Nichols Sunderland, Inc., West St., Danbury, brick, steel high school. $180,000. $85,500 P.W.A. grant approved. Noted Feb. 24, C.D.—Mar. 4, E.N.-R.

Public Buildings (Continued)

Conn., New London—City, Bd. Educ., plans by A. Graham Creighton, 140 State St., 3 story, 65x70 ft., 1 story, 72x130 ft., brick, steel technical high school addition. Waller St. $212,300. P.W.A. approved $93,535 grant.

Conn., Thomaston—Bd. Selectmen, Thomaston, plans by Towner & Sellew Associates, Inc., 164 Court St., Middletown, brick, steel high school. $182,000. P.W.A. approved $81,900 grant. Noted Dec. 29, C.D.—Jan. 7, E.N.-R.

Idaho, Boise—Ada Co., c/o C. C. Kendall, clk., plans 5 story courthouse and jail building. $354,300. $195,000 bonds voted. Noted May 3, C.D.—May 6, E.N.-R.

Idaho, Twin Falls—School Dist. plans by R. E. Morse, Twin Falls, new grade school, enlarge three other grade schools and remodel high school. $350,000. Bond issue approved.

Ill., Sterling—Bd. Educ., sketches by R. W. Work, 75 East Wacker St., constructing high school.

Ill., Zion—Bd. Educ. plans by D. Chubb, 109 North Dearborn St., 2 story, basement, brick high school. $300,000.

★**†Ia., Burlington**—Treas. Dpt. at office Sup. Archt., Wash., D. C., rejected bids May 14, constructing 138x300 ft. memorial auditorium, 75 ft. high. $600,000. Noted May 18, C.D.—May 20, E.N.-R.

Ia., Cresco—Howard Co. plans by C. Altfillisch, Decorah, constructing 3 story, brick court house. $215,000. Applied for P.W.A. funds.

Me., Lewiston—See "Waterworks."

Mass., Braintree — Town, L. Coslin, chn. School Com., 21 Mt. Vernon Ave., plans by R. H. Doane, 89 Broad St., Boston, school, Hollingsworth Park. To exceed $150,000. Noted May 27, C.D.—June 3, E.N.-R.

Mich, Pontiac—City plans municipal electric plant, incl. three oil burning diesel engines, other machines, panels, wires and distributing apparatus.

Minn., Adrain — City, F. J. Forkenbrock, clk., furnishing, installing diesel power unit for municipal electric power plant. To exceed $40,000. Druar & Milinoswki, 830 Globe Bldg., St. Paul, engrs.

Mont., Hardin—Big Horn Co. School Dist. plans by C. Cohagen, Billings, new school. $168,000.

Mont., Livingston—School Bd., plans by F. F. Willson, Gallatin Blk., Bozemen, new high school. $225,000 bonds voted. Noted May 27, C.D.

Neb., Hastings—State Bd. Control, Lincoln, plans brick ward building at State Hospital for Insane. $400,000. Applied for P.W.A. funds.

N. J., Newark—City plans by F. Grad & Son, 45 Commerce St., constructing new elevator and incidental alterations in Newark City Hospital, Fairmount Ave.

N. J., Trenton—New Jersey State Military Bd., S. H. Barlow, quartermaster general, plans by L. S. Kaplan, 33 West State St., Trenton, and H. A. Kelly, 921 Bergen Ave., Jersey City, brick, steel armory, Cumberland Co. $250,000. Noted Mar. 11, C.D.—Mar. 18, E.N.-R.

N. J., West Orange—Town, H. Berry, pres., Northfield Rd., plans by Hacker & Hacker, 201 Main St., Fort Lee, three class rooms and auditorium addition, Eagle Rock Ave.; and fireproof auditorium addition of new class rooms and installation new heating system in school, Washington St. $375,000.

N. J., Wood Ridge—Bd. Educ., Boro Hall, plans by Tooker & Marsh, 101 Park Ave., New York, addition and alterations to existing high school. $142,000. Applied for P.W.A. grant.

N. Y., Albany—City, City Hall, plans improving schools. $200,000. Private plans. To be financed by bond issue.

N. Y., Alexander—Central School Dist., taxpayers of 18 school districts in and around Alexander will vote at once on proposal to consolidate school districts and construct central school. Est. about $300,000. Applied for $132,400 P.W.A. grant. Noted June 30, 1936, C.D.—Aug. 6, 1936, E.N.-R.

N. Y., Akron—Bd. Educ. School Dist. 3, plans by Fretts, Tallamy & Senior, 5488 Maine St., Williamsville, constructing garage. $40,000. Will apply for P.W.A. funds.

N. Y., Albany—State Bd. Educ., Ontario St., plans constructing dormitory for male students. To exceed $150,000.

N. Y., Creedmoor — Dpt. Mental Hygiene, State Bldg., Albany, rejected bids June 2, general construction, heating, sanitary, electrical work, special electric fixtures, etc., at Creedmoor State Hospital. Noted June 8, C.D. June 10, E.N.-R.

N. Y., Elba—Central School Dist., R. A. Porter, pres., at a special election 11 school districts near here voted to construct central school. $350,000. Applied for $171,135 P.W.A. funds. **Maturity later in 1937.**

★**N. Y., Flushing**—State of New York, Albany, and Dpt. Parks, Arsenal Bldg., New York, plan constructing amphitheatre, island stage and exhibition building at World's Fair Site, Flushing Meadows Park. $1,600,000. Sloan & Robertson, 420 Lexington Ave., New York, archts.

N. Y., Flushing — G. U. Harvey, pres. Queens Boro, Queens Subway Bldg., Long Island City, plans by C. P. Lovell, c/o owner, constructing garage and storage, Myrtle Ave. and Downing St. $40,000.

N. Y., Flushing—New York World's Fair 1939, Inc., Empire State Bldg., New York, plans by Mayers, Murray & Phillip, 2 West 47th St., New York, constructing Medicine and Public Health Building, on Theme Plaza, $1,000,000; plans by Dwight James Baum, Waldo Ave. and 244th St., constructing Hall of Shelter, opposite IRT-BMT Plaza, $300,000; and plans constructing World of Tomorrow Village, Community Interests Zone, $150,000, all at World's Fair Site, Flushing Meadows Park.

N. Y., Malone—State Dpt. Educ., Education Bldg., Albany, plans by W. E. Haugaard, State Bldg., Albany, constructing Malone State School for Deaf. $150,000 with equipment. T. F. Farrell, State Bldg., Albany, engr.

N. Y., Olean—City, F. W. Forness, mayor, plans by M. J. Hurd, Exchange Natl. Bank Bldg., Olean, constructing city hall. $200,000. Applied for $89,100 P.W.A. funds. Noted May 27, C.D.—June 3, E.N.-R.

N. Y., Rochester — Bd. Educ., Education Bldg., plans constructing Edison Technical High School addition. To exceed $150,000. **Maturity in spring, 1938.** Engineer and architect not appointed.

N. Y., Utica—Bd. Educ., City Hall, plans by Bagg & Newkirk, U. G. & E. Bldg., constructing 2 gymnasiums and auditorium at T. R. Proctor High School. To exceed $150,000. Will finance by bond issue instead of P.W.A. **Maturity in July.** Noted Aug. 4, C.D.—Aug. 6, E.N.-R.

N. Y., Van Etten—Central School District, plans by Bley & Lyman, 505 Delaware Ave., Buffalo, constructing central school. To exceed $150,000. **Maturity late in 1937.** Noted Apr. 26, C.D.—Apr. 29, E.N.-R.

N. Y., Wappingers Falls—Central School Bd. forming plans constructing school. To exceed $150,000. Engineer and architect not appointed.

★**†N. Y., West Point**—Treas. Dpt., Federal Bldg., Wash., D. C., made plans and takes bids on general contract in summer, metal depot (silver depository) near U. S. Military Academy here. $600,000.

N. Y., Yonkers—Bd. Educ., plans by A. G. Corbin, deputy supt. Schools, City Hall, altering and constructing additions to School 6, Ashburton Ave. To exceed $150,000. **Maturity summer 1937.**

N. C., Chapel Hill — University of North Carolina, F. P. Graham, pres., plans by Atwood & Weeks, Durham, constructing cafeteria for college. $217,754. $97,000 grant approved.

★**N. C., Raleigh**—State, C. Johnson, state treas., Raleigh, plans by Northrup & O'Brien, Winston-Salem, large state office building, Salisbury and Edenton Sts. $600,000. Will call for bids at very early date.

N. D., Fargo—City, c/o C. O. Jorgenson, aud., sketches made by W. F. Kurke, Fargo, razing present auditorium structure, constructing new hall and armory with main auditorium 117x128 ft. $250,000. Will apply for $250,000 P.W.A. loan and grant. Probably hold election after July 1 to vote $150,000 bond issue. W. P. Tarbell, city engr.

N. D., Minot—City, J. W. Bliss, mgr., plans 3 or 4 story, brick, stone, rein.-con. municipal auditorium to house city hall, city offices, stage and auditorium, jail. $300,000. Project approved by Auditorium Committee with recommendation that a date be set for special election to vote on $200,000 bond issue.

O., Ashtabula—Bd. Educ., election June 29, to vote $127,000 bonds constructing school addition. $225,000. Applied for P.W.A. loan. H. A. Fulton, 5716 Euclid Ave., Cleveland, archt. Noted Apr. 6, C.D.—Apr. 8, E.N.-R.

†O., Chillicothe—Resettlement Administration, Wash., D. C., plans constructing 49 farm houses, in Ross and Pickaway Counties, northwest of here. To exceed $150,000. D. R. Martindill, McArthur, mgr.

O., Cincinnati—Bd. Educ., 216 East 9th St., bids in July or later, 4 story addition to Western Hills High School. $200,000. F. W. Garber, 616 Walnut St., archt.

O., Tiffin — Seneca Co. Bd. Educ. plans school. $250,000. Architect not appointed.

O., Wellington—Wellington Village School Dist., E. E. Watters, pres., plans school. Lorain Co. $160,000. Applications made for P.W.A. funds.

Pa., Ashley—Municipality plans diesel electric power plant. $40,000 or more. Architect not appointed. **Maturity indefinite.**

Pa., California—Commonwealth of Pennsylvania, 600 North 2nd St., Harrisburg, A. S. Janeway, executive dir., California State Teachers College, preliminary drawings by C. C. Compton, 4th and Thompson Sts., Donora, brick, steel physical education building. $200,000.

Pa., Edwardsville—Edwardsville School Bd., W. Jenkins, High School Bldg., plans by J. A. McGlynn, Forty Fort, Kingston, brick high school. $200,000.

†Pa., Mount Pleasant—U. S. Resettlement Administration, Wash., D. C., plans constructing factor. $65,000.

Pa., Newton Falls—Municipality plans diesel engined electric power plant. To exceed $40,000.

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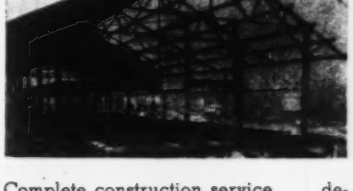

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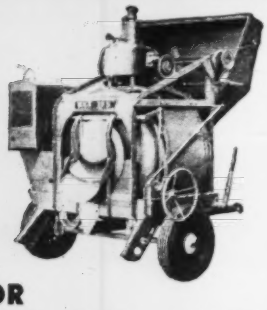

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Public Buildings (Continued)

★**Pa., Pittsburgh**—Commonwealth of Pennsylvania, A. S. Janeway, exec. dir., 600 North 2nd St., Harrisburg, plans by R. Marlier, Empire Bldg., brick, steel psychiatric hospital. $2,500,000. J. Farris, Empire Bldg., Pittsburgh, engr. Bids June 15 for test boring. Application made to P.W.A.

★**Pa., Scranton**—General State Authority, Harrisburg, plans by J. J. Howley, 250 Wyoming Ave., laundry, garage and power house. $850,000.

Pa., Springfield Twp.—Springfield Twp., c/o A. M. Godshall Chestnut Hill, Phila., plans altering and constructing brick addition to Senior High School, Erdenheim. $250,000.

Pa., Wilkes-Barre — Wilkes-Barre School Bd., c/o W. J. Kear, 83 North Washington St., plans by T. A. Forster, Brooks Bldg., 2 story, brick grade school $100,000; 2 story, brick grade school $325,000. Noted Mar. 12, C.D.—Mar. 18, E.N.-R.

Tex., Bryan — City Council, c/o E. E. Yeager, mayor, plans by Giesecke & Harris, Austin and Bryan, new brick, rein.-con. high school, plain found. $280,000. Noted May 28, C.D.—June 3, E.N.-R.

Tex., Grand Falls — Grand Falls Common School Dist., c/o J. S. White, Grand Falls, plans by N. L. Peters, Grover-Crim Bldg., Longview, 1-2 story, brick, rein.-con. school, incl. building for classrooms, auditorium, band room and laboratory, boys' and girls' locker rooms, steam heating system, etc., plain found. $150,000.

Wash., Olympia—State, Capitol Bldg., plans improving old state capitol building, incl. new roof, replacing stairways, ventilating offices, installing lighting and heating, making building fireproof. $200,000. Applied for P.W.A. aid.

W. Va., Barboursville—Huntington State Hospital, Huntington, plans modern dairy barn and other farm buildings near here. $50,000. Application made to P.W.A.

†**W. Va., Elkins**—Resettlement Administration plans constructing 2 story, brick community building at Tygarts Valley Homesteads, near here. $225,000. L. W. Coberly, engr.

Wis., Green Bay—Bd. Educ., sketches by Geniesse & Connell, Green Bay, constructing school for replacing Elmore School. $200,000.

Wis., Green Bay—Bd. Educ., sketches by Foeller, Schöber & Berners, Green Bay, constructing school for replacement of Washington School. $350,000.

Wis., Milwaukee — Bd. Normal Regents, Madison, plans by A. Peabody, State Capitol, Madison, constructing library at Milwaukee State Teachers College. $325,000. Applied for P.W.A. grant.

Wis., Rhinelander—City, T. M. Wardwell, mgr., Rhinelander, plans by Law, Law & Potter, 1 South Pinckney St., Madison, constructing school. $220,800. Applied for P.W.A. grant.

★**Que., Montreal**—Women's General Hospital Administration, A. Bercovitch ch. surgeon, making plans brick, steel extension to hospital and nurses' residence, plain found. $500,000.

★**Que., Montreal** — Civic Centre Committee, c/o Alderman O. Tailleper, City Hall, plans by Perrault & Gadbois, 4200 Sherbrooke St. W., brick, stone, steel concrete hall with seating capacity and two smaller halls, 1,000 and 600 capacity basement of capacity 6,000, plain founds., Pine and Park Sts. $1,500,000.

BIDS ASKED

Calif., Lodi—July 6, by L. Nichols, city supt. schools, 10 classroom addition library and shop unit for Needham School. $150,000 bonds voted for same. P. Sala, 2130 North Commerce St., Stockton, archt. Noted Apr. 9, C.D.—Apr. 15, E.N.-R.

†**Calif., Sacramento**—July 13, by Con. Q.M., Sacramento Air Base, constructing equipment repair building, A. C. Operations Office Building and Air Corps Engineering Office Building.

†**Calif., Santa Monica**—July 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $315,000.

†**Colo., Gunnison**—July 23, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office.

†**D. C., Wash.**—Yards & Docks, Navy Dpt., Wash., D. C., taking bids altering and repairing administration building at Aviation Base, Anacostia, Spec. 8448.

†**Ind., Liberty**—July 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Agricultural and Post Office Building. $67,000.

†**Ind., Paoli**—July 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $67,000. Noted Nov. 16, C.D.—Nov. 19, E.N.-R.

Ill., Rushville—July 8, by Treas. Dpt. at office Sup. Archt., Wash., D. C., 1 story, basement, brick, stone post office. $70,000 appropriated. Noted Feb. 23, C.D.—Feb. 25, E.N.-R.

Ky., Corydon—July 9, by Dpt. Hys., Frankfort, storage garage building. Bids are to be received on the basis of construction of foundation and other miscellaneous work and transporting and erecting building. All material above concrete furnished will be furnished by the Department f.o.b. cars on siding, Corydon.

Ky., Eddyville—See "Contracts Awarded."

†**Md., Bethesda**—July 23, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $115,000.

Mass., Brookline—June 28, by Town Bd. Selectmen, brick, steel municipal garage for Street Dpt. $40,000. Strickland & Strickland, 75 State St., Boston, archts. Noted May 7, C.D.—May 13, E.N.-R.

†**Mich., Wayne**—July 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $70,000. Noted Oct. 14, C.D.—Oct. 22, E.N.-R.

†**Miss., Okolona**—July 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Agricultural and Post Office Building. $65,000.

Mo., Marshall—July 8, by State School for Feeble Minded, Marshall and Bi-Partisan Advisory State Building Comn., E. M. Eagan, secy., Jefferson City, furnishing materials equipment and constructing power plant, piping, auxilary equipment and steam and water distribution, plant wiring, and power plant improvements, at State School for Feeble Minded, here. P.W.A. project. J. H. Porter & Co. and G. E. Wells, Inc., 420 Security Bldg., St. Louis, engrs.

Mo., Nevada—July 8, by State Hospital 3 and Bi-Partisan Advisory Bd., State Bldg. Comn., E. M. Eagan, secy., Jefferson City, constructing power plant, piping, and auxiliary equipment, electrical distribution plant, wiring and power plant improvements at State Hospital 3. P.W.A. project. Black & Veatch, 4706 Bway., Kansas City, Mo., engrs.

Mo., Poplar Bluff — Poplar Bluff Public School, c/o H. I. Ruth, pres. Bd. Educ., taking bids on revised plans constructing 2 story, 50x107 ft. Kellytown District School, and 1 story, 23x32 ft. fuel room; also 87x145½ ft. brick, terra cotta or cast stone gymnasium. Johnson & Maack, Chemical Bldg., St. Louis, archts. Noted June 11, C.D.—June 17, E.N.-R.

Mo., St. Louis—July 6, by Bd. P. Serv., City Hall, furnishing, erecting in place certain structural steel work in service building at City Hospital 1. $14,000. P.W.A. project. W. C. E. Becker, city engr.

Mo., St. Louis—July 13, by Bd. Pub. Serv., City Hall, furnishing, erecting combustion control and metering equipment in boiler room at New Service Building, City Hospital 1, Carroll and Dillon Sts. $9,000. P.W.A. project. W. C. E. Becker, city engr.

†**Mont., Deer Lodge**—July 22, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $73,000. Noted May 26, C.D.—June 3, E.N.-R.

N. Y., Flushing — July 6, by New York World's Fair 1939, Inc., Empire State Bldg., 350-5th Ave., New York, general construction plumbing, ventilating shelter building (I-N-6).

†**N. Y., New York**—July 1, by Treas. Dpt. at office Sup. Archt., Wash., D. C., changes and additions to mail handling equipment in Parcel Post Building.

★†**N. Y., New York**—July 21, by Treas. Dpt. at office Sup. Archt., Wash., D. C., remodeling U. S. Post Office. $1,034,000.

N. Y., Palermo—July 2, by Bd. Educ., R. A. Backus, pres., Mexico, general construction heating, ventilating, plumbing and electrical work for new school here for Central School Dist. of Towns of Mexico, Parish, Palermo, Hastings, New Haven, Volney and Richland, Oswego Co. Noted June 15, C.D.—June 17, E.N.-R.

†**N. C., Elkin**—July 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $65,000.

†**O., Clyde**—July 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office.

†**O., Struthers**—July 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $70,000. Noted May 3, C.D.—May 6, E.N.-R.

★**Okla., Tulsa**—July 8, by Bd. Educ., W. A. Melton, bus. mgr., constructing Will Rogers High School, 4 story, basement, 250x390 ft., brick, rein.-con., plain found., 4th St. $1,300,000. L. B. Senter, Philtower Bldg., archt. W. C. Roads, Tulsa, engr.

†**Pa., Everett**—July 6, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office.

†**Pa., Johnstown**—July 13 (extended date), by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $100,000. Noted May 20, C.D.—May 27, E.N.-R.

★†**Pa., Phila.**—June 29 (extended date), by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Court House. $3,500,000. Noted June 4, C.D.—June 10, E.N.-R.

†**Pa., Tunkannock**—July 23, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $70,000.

†**S. C., Bamberg**—July 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Agriculture and Post Office building. $68,000.

†**Tenn., Crossville**—July 16, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office.

Public Buildings (Continued)

†**Tenn., Knoxville** — July 14, by Veterans Bureau Arlington Bldg., Wash., D. C., constructing brick, rein.-con. boiler house, steel rolling doors, steel chairs, lightning conduits, boiler plant, equipment, electrical work, and materials. Private plans.

Tenn., Memphis—July 15, by Board Light & Water Comrs., furnishing, installing electrical equipment and circuits for South Gate substation A, for Memphis Light & Water Division, P.W.A. Project Docket No. Tenn. 107-P-D. Sub-Project Contr. 3. T. H. Allen, Chn. Est. $200,000.

†**Tenn, Rockwood**—July 6, by Treas. Dpt. or office Sup. Archt., Wash., D. C., constructing U. S. Post Office.

†**Tex., Ballinger**—July 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $79,000. Noted May 12, C.D. —May 20, E.N.-R.

†**Tex., Decatur**—July 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $80,000.

†**Tex., Lamesa**—July 16, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. Noted Feb. 26, C.D.—Mar. 4, E.N.-R.

†**Tex., Rush** — July 16, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $67,000. Noted May 12, C.D.—May 20, E.N.-R.

†**Vt., Northfield**—July 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $70,000. Noted July 10, C.D.—July 16, E.N.-R.

†**Wash., Toppenish** — Aug. 10, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $70,000. Noted Nov. 13, C.D.—Nov. 19, E.N.-R.

†**P. R. Catano**—July 10 (extended date), by Treas. Dpt. at office Sup. Archt., Wash., D. C., additional mechanical and electrical equipment for cement plant. Noted June 4, C.D. —June 10, E.N.-R.

LOW BIDDERS

★**La., New Orleans**—Bd. Administrators of Charity Hospital, June 9, constructing superstructure of main building for Charity Hospital, from George A. Fuller Co., Munsey Bldg., Wash., D. C., completion July 15, 1938, $6,074,000; completion Dec. 15, 1938, $5,994,000; completion June 13, 1939, $5,894,-000. P.W.A. project. Noted May 14 C.D.—May 20, E.N.-R.

★†**Mich., Dearborn** — Veterans Administration, Arlington Bldg., Wash., D. C., June 5, constructing buildings and utilities at Veterans Hospital from Cooper-Little Co., 572 Maccabees Bldg., Detroit, $1,112,000***elevators, from Otis Elevator Co., Wash., D. C., $36,947***refrigerating equipment from York & Mehry, Corp., Phila., Pa., $25,643. Noted June 4, C.D.—June 10, E.N.-R.

CONTRACTS AWARDED

Ariz., Mesa—Mesa Union High School, constructing gymnasium building and manual arts annex, to C. D. Bradley, Phoenix, **$73,545**. P.W.A. This is last major unit of $218,000 improvement program. Noted Nov., C.D.—Nov. 12, E.N.-R.

†**Ark., Hamburg**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to A. F. Blair, 1st Natl. Bank Bldg., Montgomery, Ala., **$44,397**. Bids Feb. 12. Noted Jan. 18, C.D.—Jan. 21, E.N.-R.

Calif., Encinitas—San Dieguto Union High School Dist., library building, gymnasium and classroom group, concrete work, paving, plumbing, heating, ventilating and electrical work, to H. Muns, 1st Natl. Bank Bldg., San Diego, **$218,267**. Bids May 3.

†**Calif., San Francisco**—Treas. Dpt. at office Sup. Archt., Wash., D. C., repairing and improving U. S. Post Office and Court House, to P. C. Amgross & Sons, Wallace Ave. and Keith St., **$131,420**.

Calif., Stockton—State Dpt. P. Wks. Div. Architecture, P. Wks. Bldg., Sacramento, general contract additions to rein.-con. kitchen building, constructing new boiler plant, to Campbell Constr. Co., 800 R St., Sacramento, $9,722***electrical work, to Collins Electric Co., 708 East Market St., Stockton, $995*** plumbing and heating, to Scott Co., 243 Minna St., San Francisco, **$5,277**. Grand total $55,-004. Bids June 8. Noted May 21, C.D.—May 27, E.N.-R.

†**D. C., Wash.**—Treas. Dpt. at office Sup. Archt., Wash., D. C., pointing masonry at U. S. Treasury Building, to D. E. Freedman, 710 North 12th St., Phila., Pa., **$18,400**. Bids May 18. Noted May 17, C.D.

Ill., Franklin Grove—Bd. Educ., Franklin Grove, general contract 1 story, 65x80 ft. gymnasium to Lindquist Constr. Co., Dixon, Ill., **$240,000**. Bids May 7. Noted Apr. 29, C.D.

†**Ill., Rock Falls**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. A. Redding, 1544 Cleveland Ave., Whiting, Ind., **$48,250**. Bids June 4. Noted Apr. 30, C.D.—May 6, E.N.-R.

Ind., Indianapolis—Bd. School Comrs., 150 North Meridan St., general contract 2 story, basement, high school addition, 2215 Washington St., to W. P. Jungclaus Co., 825 Massachusetts Ave., **$214,272*****steam heating and ventilating, to F. Janitz, 617 Virginia Ave., **$51,128*****plumbing, to Strong Bros., 309 North Alabama St., **$15,598*****electrical work, to Webb Electric Co., 2316 East 10th St., **$12,-402**. Grand total $293,400. Bids June 1. Noted May 4, C.D.—May 6, E.N.-R.

†**Ia., Sigourney**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Bonded Constr. Co., 110 East 42nd St., New York, N. Y., **$49,307**. Bids June 3. Noted May 11, C.D.—May 13, E.N.-R.

Kan., Norton—State Tuberculosis Sanitorium, c/o J. A. Mermis, state bus. mgr., Topeka, constructing hospital, to Peterson Constr. Co., Salina, **$259,825**. R. A. Coolidge, State House, Topeka, archt.

†**Kan., Salina**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Lundberg-Richter Co., Fredericksburg, Va., **$276,600**. Bids May 18. Noted Apr. 9, C.D.—Apr. 15, E.N.-R.

Ky., Eddyville—State Dpt. Welfare, Frankfort, 5 story prison addition. To exceed **$150,000**. Owner builds with convict labor. Owner purchases materials. J. L. McDermott, Ft. Thomas, archt. Noted Apr. 29, C.D.—May 6, E.N.-R.

Ky., La Grange—State, constructing 6 dormitory buildings at new state prison farm, near here, to A. L. Coupe Constr. Co., Louisville, **$327,000**. Governor Chandler, F. A. Wallis, Welfare Comr., and J. D. Talbott, Finance Comr., and G. Sager, Louisville, representing P. Wks. Administration, which is assisting in the project. Noted Mar. 11, C.D. —Mar. 18, E.N.-R., under "Kentucky."

†**Ky., Whitesburg**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Andrew & Dawson, Box 1301, Montgomery, Ala., **$48,797**. Bids June 1. Noted Apr. 23, C.D.—Apr. 29, E.N.-R.

†**Md., Annapolis** — Yards & Docks, Navy Dpt., Wash., D. C., improving armory at U. S. Naval Academy, Spec. 8447, to W. F. Martens, Newport News, Va., **$20,430**. Bids May 26. Noted May 18, C.D.—May 20, E.N.-R.

Mass., Northampton — Commonwealth of Massachusetts, Dpt. Mental Diseases, State House, Boston, installing food elevators at North and South Infirmaries, to F. S. Payne Co., 78 Richdale Ave., Cambridge, **$14,563**; hatchways, to Casper Ranger Constr. Co., 6 Newton St., Holyoke, **$7,074**. Bids May 12. Noted May 11, C.D.

Mass., Springfield — City, stables, storage and garage for Street Dpt., 20 stalls and 1 story, 25x144 ft., brick garage, to Adams & Ruxton Constr. Co., 1497 Main St., **$19,-545**. Est. $25,000.

†**Mich., Grayling**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. I. Barnes, Culver, Ind., **$10,235**. Bids May 28. Noted Apr. 23, C.D.—Apr. 29, E.N.-R.

★†**Minn., Minneapolis**—P. Wks, Administration, Div. Housing, Wash., D. C., constructing superstructures for Summerfield Housing Project, Project H-4201, to Walter Butler Co., 719 New York Bldg., St. Paul, **$2,225,000**. Bids June 2. Noted June 4, C.D. —June 10, E.N.-R.

†**Minn., Sandstone**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing, drilling and developing deep well for providing deep well pumps, etc., at federal jail, to Layne-Western Co., 719 Palace Bldg., Minneapolis, **$24,800**; 2 electric freight elevators, to S. Heller Elevator Co., 240 North Milwaukee, **$5,690**. Bids Mar. 16. Noted Mar. 29, C.D.—Apr. 1, E.N.-R.

†**Miss., Picayune** — Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to H. I. Flinn, Montgomery, Ala., **$40,791**. Bids June 3. Noted Apr. 21, C.D.—Apr. 29, E.N.-R.

Mo., Kansas City—City, switchboard for pumping station at Nicholson and Monroe Sts., to Westinghouse Electric & Mfg. Co., 2124 Wyandotte St., **$29,348**.

†**Mo., St. Louis**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing University City Branch Post Office, to Dickie Constr. Co., 317 North 11th St., **$92,972**. Bids Dec. 18. Noted Nov. 25, C.D.—Dec. 3, E.N.-R.

Mo., Stanberry—City, S. W. Hathaway, clk., improving power plant, incl. diesel engine generating unit to Fairbanks-Morse Constr. Co., 900 South Wabash Ave., Chicago, Ill. Est. **$72,500. P.W.A.** Project held up by court injunction.

†**Mo., University City (St. Louis P. O.)**—Tres. Dpt. at office Sup. Archt., Wash., D. C., general contract 1 story, basement, branch post office, Kingsland St. between Delmar and Washington Aves., to Dickie Constr. Co., 517 Louderman Bldg., St. Louis, **$92,972**. Bids Dec. 18. Noted Dec. 1, C.D.—Dec. 3, E.N.-R.

Nev., Pioche—Lincoln Co. Power Dist. 1, constructing substations at Prince, Delmar Junction, Caliente, Pioche, Panaca and Gold Springs, to Bennett & Taylor, 1041 Venice Blvd., Los Angeles, Calif., **$19,112**. Bids June 4. Noted May 27, C.D.

★**N. Y., Brooklyn**—R. V. Ingersoll, pres. Brooklyn Boro, Boro Hall, general contract court house, Appelate Division, to Pstay & Fuhrman, Inc., 369 Lexington Ave., New York, **$747,000**. Bids May 5. Noted May 7, C.D.—May 13, E.N.-R.

N. Y., Brooklyn—Bd. Educ., 500 Park Ave., New York, constructing excavation, foundation, etc., for addition to P.S. 131, to E.

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Public Buildings (Continued)

Melucci & C. Carratura, 1209 61st St., **$29,589.** Bids Mar. 22. Noted Mar. 17, C.D.

N. Y., Brooklyn—Bd. Educ., 500 Park Ave., New York, general contract P.S. 68, to Skolnick Building Corp., 17 East 42nd St., New York, **$202,000.** Bids Apr. 20. Noted Apr. 13, C.D.—Apr. 15, E.N.-R.

†N. Y., Buffalo — U. S. Coast Guard, 452 Federal Bldg., Milwaukee, Wis., heating work at Buffalo Coast Guard Station, Michigan Ave. and Lake Erie, incl. piping, unit heaters, etc., to H. M. Dechert, Inc., 181 Allen St. Est. **$3,000** plus.

N. Y., Corning—Bd. Educ., plumbing for Corning Free Academy, to W. A. Moyer & Son, Chittenango***heating, to Quackenbush & Co., 597 Michigan Ave., Buffalo***electrical work, to Economy Electric Co., Ellenville. Noted May 27, C.D.—June 3, E.N.-R.

N. Y., Endicott—Bd. Educ., plumbing and heating for school, to S. J. Evans, 1713 Riverview Dr.; electrical work, to A. C. Smith, 615 South St. Noted May 20, C.D.—May 27, E.N.-R., under "Contracts Awarded."

N. Y., Flushing — New York City World's Fair Commission, 64th St. and 5th Ave., New York, constructing foundations for New York City Building, Grand Central Parkway, in Flushing Meadow's Park, Queens Boro, to Palmo Constr. Co., 105-12 101st Ave., Ozone Park, **$178,484.** Bids May 25. Noted May 17, C.D.—May 20, E.N.-R.

★**N. Y., Jamaica**—G. U. Harvey, pres. Queens Boro, Queens Subway Bldg., Long Island City, general construction and interior finish of General Court House, to John Kennedy & Co., 41 East 41st St., New York, **$3,077,800.** Bids May 17. Noted May 18, C.D.—May 20, E.N.-R.

N. Y., New Dorp — Bd. Educ., 500 Park Ave., New York, plumbing for P.S. 8, Lindenwood Rd. and School St., to R. W. Baylor, 1606 Victory Blvd., Port Richmond, **$4,117;** electrical work, to C. F. Zwoifel & Co., 161 East 32nd St., New York, **$15,981.** Bids Apr. 22. Noted Apr. 16, C.D.

†N. Y., New York — Treas. Dpt. at office Sup. Archt., Wash., D. C., elevator in U. S. Custom House, to A. B. See Elevator Co., 1112 21st St. N.W., Wash., D.C., **$159,000.** Bids June 2. Noted May 10, C.D.—May 13, E.N.-R.

N. Y., Theresa—Bevan Constr. Co., general contractors, 3566 East Genesee St., Syracuse, structural steel for school, for Union Free School Dist. 1, to Gray Steel Co., 1407 East Erie Blvd., Syracuse. Noted May 27, C.D.—June 3, E.N.-R., under "Contracts Awarded."

†N. Y., West Point — Con. Q.M., U. S. Military Academy, plumbing and heating for armory, U. S. Military Academy, to J. S. Cassidy Co., Inc., 133 Austin St., Cambridge, Mass.; electrical work, to Stafford Electric Constr. Co., Brooklyn, N. Y. Noted May 27, C.D.—June 3, E.N.-R., under "Contracts Awarded."

★**O., Toledo**—Bd. Educ., 1 story, brick, steel school, plain found., Monroe St., to H. J. Spieker Co., 1418 Elm St. **$1,081,179.** E. Gee, 2836 Scottwood Ave., archt. Bids June 9. Noted June 15, C.D.—June 17, E.N.-R.

†O., Worthington—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Skilken Bros., 44 East Broad St., Columbus, **$38,725.** Bids May 28. Noted Apr. 21, C.D.—Apr. 29, E.N.-R.

Okla., Oklahoma City — City, constructing electric passenger elevator for municipal auditorium, to W. S. Bellows Co., Oklahoma Savings & Loan Bldg., **$22,348.** Est. $24,000. Awarded June 7.

†Pa., Ephrata — Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to S. Plato, Hamilton, N. Y., **$53,600.** Bids Mar. 26. Noted Mar. 8, C.D.—Mar. 11, E.N.-R.

Pa., Phila—McCloskey Co., general contractors, 1620 West Thompson St., furnishing 850 tons structural steel in connection with construction new senior high school building, 67th and Elmwood Ave., for Bd. Educ., to Bethlehem Steel Co., Bethlehem, about **$75,000 to $85,000.** Noted June 17, C.D., under "Contracts Awarded," and May 27, E.N.-R., under "Bids Asked."

†Pa., Phila.—Bureau Yards & Docks, Navy Dpt., Wash., D. C., soundproofing engine test rooms at Navy Yard, Spec. 8354, to Hartford Cement Co., Hartford, Conn., **$20,676.** Bids Apr. 21. Noted Apr. 19, C.D.—Apr. 1, E.N.-R.

★**Pa., Phila.**—At office A. B. Anderson, secy. and bus. mgr., general contract (except demolition, excavating and foundations), new Senior High School building, 67th St. and Elmwood Ave., to McCloskey Co., 1620 West Thompson St., **$1,389,000*****heating, to Riggs Ditler Co., Inc., 1518 Walnut St., **$238,238*****ventilating, to Wm. T. Cameron Co., 216 Arch St., **$19,152*****lockers, to Lyons Metal Products Co., Inc., City Centre Bldg., **$8,750*****plumbing, to Huffman, Wolfe Co., 11 West Rittenhouse St., **$165,990*****electrical work, to Keystone Eng. Corp., 1817 Callowhill St., **$139,500*****elevators, to Warsaw Elevator Co., 124 North Carlisle St., **$23,251.** Grand total $1,923,881. Bids June 6. Noted May 24, C.D.—May 27, E.N.-R.

S. D., Brookings—City, constructing foundations and alterations at municipal power plant, to R. A. Mark, Brookings, **$22,250;** piping, to C. E. Darlson, 258 Boyce-Greeley Bldg., Sioux Falls, **$11,850.**

Tex., Kerrville—State Tubercular Sanatorium, Kerrville, 2 story, part basement, 90x190 ft., brick, rein.-con., steel ward building for negroes, plain found., to Hill & Combs, 321 Melrose St., San Antonio, **$93,440;** plumbing and heating, to A. J. Monroe, 1446 North Flores St., San Antonio, **$13,248.** W. E. Simpson, Milam Bldg., San Antonio, engr.

Tex., Sherman—City, H. G. Turk, mayor, 2 to 3 story, brick, rein.-con. auditorium with 3,500 seating capacity, plain found., altering and repairing present 3 story municipal building, to O. K. Johnson, Waco, **$119,328.** Awarded June 14. Voelcker & Dixon, 913½ Indiana Ave., Wichita Falls, archts. Air-cooling system to be awarded soon, etc.

†Wash., Colville—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to West Coast Constr. Co., Lloyd Bldg., Seattle, **$50,238.** Bids May 7. Noted Apr. 9, C.D.—Apr. 15, E.N.-R.

Wash., Steilacoom — State Dpt. Finance, Olympia, furnishing elevator for Western State Hospital, to F. T. Crowe Corp., Walker Bldg., Seattle, **$6,500.** Bids June 7.

†Wis., Milwaukee—Tres. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Postal Substation C, North 3rd St., to Thorp-Rogoff Co., 306 South Wabash Ave., Chicago, Ill., **$120,694.** Bids May 18. Noted Apr. 15, C.D.—Apr. 22, E.N.-R.

B. C., Esquimault—C. Burns, dir. Contracts, Dpt. National Defence, Ottawa, Ont., constructing 30x46 ft. guard house, containing dormitories, with living and sleeping accommodations for five or six men, vaulted basement specially reinforced and other features, sixteen 32x71 ft. powder magazine buildings and concrete protecting wall in front of each building on west shore of Esquimalt Harbor, to Parfitt Bros., 1405 Douglas St., Victoria, **$120,000.** Work started. Bids May 3. Noted Apr. 29, C.D.

N. B., Ste. Stephen—See "Earthwork, Irrigation, Drainage and Waterways."

Ont., Barriefield — Dpt. National Defence, Ottawa, Ont., constructing garage for Royal Canadian Corps of Signals Depot, near Kingston, to Frontenac Constr. Co., Ltd., 69 Yonge St., Toronto, **$51,694.** Major Maple, Dpt. National Defence, Ottawa, engr.

Ont., Ottawa—Dpt. P. Wks., Ottawa, installing coldwater service in House of Commons with brass pipe, to W. G. Edje, Ltd., 150 Gloucester St., **$9,000.** C. D. Sutherland, Ottawa, archt. Bids June 10, awarded June 11. Noted June 7, C.D.

†Alaska, Juneau—Treas. Dpt. at office Sup. Archt., Wash., D. C., painting, patching, waterproofing exterior, repairing roof, plaster floors, etc., U. S. Post Office, to J. B. Warack, 516 3rd Ave., Seattle, Wash., **$7,000.**

COMMERCIAL BUILDINGS

PROPOSED WORK

Ariz., Phoenix—F. W. Woolworth Co., 233 Bway., New York, plans distribution and storage and department store addition. Est. about $150,000. Site purchased.

Conn., Norwich—Chandler & Palmer, archts., 16 Franklin St., Norwich, soon let contract 4 story, 70x80 ft., brick, steel hospital addition for W. W. Backus Hospital, 326 Washington St. $150,000. Noted May 24, C.D.—May 27, E.N.-R.

Ill., Chicago — F. Stuckart, c/o J. E. O. Pridmore, archt., 32 West Randolph St., preliminary estimates constructing 2 story, basement, 100x150 ft. theatre and store, 111th St. and Webster Ave. **$150,000.**

Ill., Springfield — Frisina Amusement Co., plans Will Rogers Theatre, incl. 2 stores and 5 apartments on 2nd floor, air conditioning, 904-908 South Grand Ave. $175,000. J. B. Giachetto, executive mgr.

Ill., Springfield — Kerastoes Bros. Circuit Operators, plans by J. F. Lankton, 1805 Knoxville Ave., Peoria, constructing theatre, store and office building, east side of West Grand Ave., south of South Grand Ave. $150,000.

Ind., Hammond — Owner, c/o L. Hess, archt., Hammond, made plans constructing cottages in "Hessville," in Hammond. $150,000.

Mass., Auburndale — Lasell Junior College, 117 Woodland Rd., sketches by Andrews, Jones, Biscoe & Whitmore, 50 Congress St., Boston, brick, steel gymnasium and auditorium.

★**Mass., Boston**—Boston University, D. L. Marsh, pres., 688 Boylston St., plans nearing completion by Cram & Ferguson, 248 Boylston St., Coolidge, Shepley, Bulfinch & Abbott, 1 Court St., college of business and administration, Bay State Rd. $1,000,000. Trustees voted to proceed with project.

Mass., Brookline—Harvard Amusement Co., A. Sharaf in charge, 163 Harrison Ave., Boston, plans by S. S. Eisenberg, 11 Beacon St., Boston, theatre, Lyceum Hall Block. Est. about $150,000.

Miss., Jackson—Heidelberg Hotel Co., c/o R. Heidelberg, mgr., East Capitol St., plans by R. W. Naef, Millsaps Bldg., 5 story, 50x100 ft., structural steel, brick, tile hotel addition to present 7 story, Capitol St. $150,000.

Nev., Reno—El Cortez Hotel, 239 West 2nd St., plans by L. Ferris, Cladianos Bldg., 6 story, rein.-con. hotel addition, West 2nd St. $150,000.

N. H., Hanover—Wells, Hudson & Grant, archts., Main St., soon let contract 3 story, basement, brick, concrete addition to fraternity house for Theta Chi Fraternity, Dartmouth College; June 29 by same architects, 3 story, basement, concrete, brick fraternity house for Kappa Sigma Fraternity, Dartmouth College. Heating, plumbing and electrical work separate. R. D. Kimball Co., 6 Beacon St., Boston, Mass., engrs.

N. J., Belleville—St. Anthony's Roman Catholic Church, 55 Franklin St., soon lets contract 1 story, basement, 42x115 ft. brick church, Franklin St. A. De Pace, 151 West 46th St., New York, archt.

N. J., Hasbrouck Heights—Corrado De Groodt, 62-8th Ave., Newark, plans by P. Triputti, 1 Gouverneur St., Newark, 5 story, penthouse, brick apartment house and 96 car garage, 241 Terrace Ave. $300,000.

N. J., Jersey City—Bergen Center Holding Corp., c/o A. F. Roe Co., 757 Bergen Ave., plans theater, store and office, Bergen and Glenwood Aves. $150,000.

N. J., Madison — Drew University, D. A. Brown, pres., plans by C. Klauder, 1429 Walnut St., Phila., Pa., library (Rose Memorial Building).

N. J., New Brunswick—St. Peters General Hospital, Easton Ave., plans by F. G. Buck, 63 Schureman St., nurses home and training school for nurses. $250,000. Funds now being raised.

N. J., Orange—Corporation, c/o S. Lasser, 60 Park Pl., Newark, plans prepared by S. Villaneuva, 23 South Harrison St., 3 story, basement, brick apartment group, Park Ave.

N. J., Paterson—Tucker & Feldman, c/o E. DeRosa, archt., 105 West 40th St., New York, making plans 1 and 2 story, basement, 100x170 ft., fireproof theatre, store and office building, Park Ave. and 31st St. $200,000.

N. J., Port au Peck—Development Corp., c/o Mount Vernon Trust Co., Mt. Vernon, N. Y., plans group dwellings, Shrewsbury River. To exceed $150,000.

N. Y., Brooklyn—Renault Corp., A. R. Aquino, pres., 8509 3rd Ave., plans by J. Burke, 32 Court St., 6 story apartment, 86th St. $150,000.

★**N. Y., Buffalo** — Buffalo Mount Vernon Development, Endicott Sq., plans constructing 400 residences on 1,000 lots at Mount Vernon, near here. $2,000,000. M. J. Rumzien, c/o owner, in charge. Private plans.

★**N. Y., Clinton**—Hamilton College, plans constructing gymnasium on campus. $500,000. Drive for funds to commence soon.

★**N. Y., Ithaca**—Cornell University, Ithaca, plans modernization and additions to college buildings, and improving grounds at College of Agriculture. $500,000. **Maturity in summer.** Private plans.

N. Y., Keuna Park—Keuka College, Keuka Park, H. S. Miller, pres., plans constructing college building. To exceed $150,000.

N. Y., Livingston—Potts Memorial Hospital, Livingston, sketches by Kohn & Butler, 56 West 45th St., New York, constructing hospital on State Hy. $300,000.

N. Y., New York—Corporation, c/o T. R. Rhoades & Co., 342 Madison Ave., plans by Pennington, Lewis & Churchill, 25 Park Ave., altering heating, plumbing in apartment, 153 East 84th St. $40,000 or more.

N. Y., New York—**Day Court Realty Co.**, 157 Remsen St., Brooklyn, plans by O. L. Silverstone, 153 Pierrepont St., Brooklyn, altering heating, plumbing in five 3 story apartments, 107 East 26th St. $70,000.

N. Y., New York—**New York Telephone Co.**, 140 West St., plans by J. M. Terry, Jr., c/o owner, altering telephone exchange and service building, 227 East 30th St. $40,000 with equipment.

★**N. Y., New York**—Societies Realty Co., Inc., 101 Park Ave., indefinitely postponed constructing assembly and office building, 133 West 43rd St. $800,000. L. F. Jallade, 579 5th Ave., archt. Noted May 20, C.D.—May 27, E.N.-R.

N. Y., New York—One Hundred Fifty-Six East 178th Street Corp., East 149th St., plans by C. Kreymborg, 349 East 149th St., 6 story apartment, 179th St. and Creston Ave. $150,000.

N. Y., New York—Thirty-Three East 22nd St., Inc., 285 Madison Ave., plans by Martin & Wilson, 276 5th Ave., altering heating, plumbing in four 5 story apartments and stores, 33 East 72nd St. $75,000.

N. Y., Potsdam — Clarkson College, postponed until 1938, constructing electrical engineering and laboratory, mechanical engineering and administration buildings. $350,000. Dwight James Baum, Riverdale on Hudson, archt. Noted Mar. 1, C.D.—Mar. 4, E.N.-R.

N. Y., Rensselaer—H. G. Veeder Realty Co., 75 State St., Albany, plans group timber residences, in Hampton Manor. To exceed $150,000. **Maturity soon.**

★**N. Y., New York**—A. Simon & Associates, 968 5th Ave., New York, plans construct

Commercial Buildings (Continued)

...ng apartment, 968 5th Ave. To exceed $1,000,000. Property acquired.

N. Y., Rochester—Monroe County Savings Bank, 35 State St., plans by C. A. Carpenter, 45 Exchange St., constructing apartment house, 30 South Goodman St. To exceed $150,000. **Maturity soon.** Permission has been granted by City Zoning Bd. Noted May 12, C.D.—May 20, E.N.-R.

N. Y., Tarrytown—Mrs. Lillian S. Ullman, Tarrytown, or c/o G. Howe, Inc., 527 5th Ave., plans constructing group dwellings, Prospect Ave. $150,000 or more. Site acquired.

O., Toledo — Toledo Society for Crippled Children, c/o A. M. Tillinghast, 3131 Collingwood St., plans by K. P. Hoke, 1217 Madison Ave., 1 and 2 story, 218x254 ft., brick, steel convalescent home, plain found. $200,000. Noted Apr. 19, C.D.—Apr. 22, E.N.-R.

Pa., Allentown—F. W. Woolworth Co., 233 Broadway, New York, leased premises 737 Hamilton St. for 40 years from Nov. 1, 1938, and plans to raze present structures and build modern 2 or 3 story store and office building. $150,000 or more. **Maturity in 1938.** Architect not appointed.

★**Pa., Erie**—St. Vincent's Hospital, G. W. Bach, pres., plans by Meyers & Johnson, Palace Hardware Bldg., 4 story, brick, steel maternity building. $500,000. Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O., engrs. Noted Apr. 23, 1936, C.D. —Apr. 30, 1936, E.N.-R.

Pa., Harrisburg—Y.W.C.A., 4th and Walnut Sts., plans by Lawrie & Green, 111 South Front St., and soon takes bids new **Y.W.C.A.** $300,000.

★**Pa., Phila.** — Franklin Trust Building, sketches by R. C. Snow, 1526 K St., Wash., D. C., and F. E. Hahn, 1700 Walnut St., Phila., housing development, to be 2 and 3 stories, duplex apartments on 20 acres containing 370 family units, 2 story row dwellings, 400 family units, 2 story apartments (400 family units on 25 acre tract), park and playground, Castor Rd., Roosevelt Blvd., Everett and McKinley Sts. $6,000,000.

Pa., Phila.—H. D. Dagit & Sons, archt., 1529 Race St., Phila., soon let contract 3 story, basement, 50x220 ft., brick, limestone, steel receiving ward for St. Vincent's Hospital for Women, 226 North 18th St.

★**Tenn., Chattanooga**—H. J. Gaul, archt., 228 East Superior St., Chicago, Ill., soon lets contract 5 story, basement, 70x203 ft., brick, rein.-con., steel addition to present hotel structure, for Alexian Bros. Hospital, c/o Brother Gerard, Chattanooga, $600,000.

Tex., Corpus Christi — R. and R. Gulf Amusement Co., Corpus Christi, plans by W. Scott Dunne, Melba Bldg., Dallas and c/o owner, Corpus Christi, and takes bids about July 3, 3 story, part basement, balcony 75x200 ft. and two 2 story, 45x50 ft., hollow tile, rein.-con., steel theatre and stores buildings, plain found. $300,000. Noted June 3, C.D.—June 10, E.N.-R.

Tex., Wichita Falls — Texas Consolidated Theatres, Inc., c/o G. M. Watson, Wichita Falls, plans theatre and store building. $150,000. Architect, c/o owner, archt.

Wis., Mosinee—St. Pauls Catholic Congregation, J. B. Cysewski, pastor, soon lets contract constructing 2 story, 36x104 ft., brick school, plain found. Oppenhamer & Obel, Wausau, archts.

Wis., Milwaukee—See "Contracts Awarded."

N. S., Glace Bay—Senate of St. Joseph Hospital, c/o Rev. C. McDonald, Bridgeport, plans addition to hospital. $200,000. B. E. Perry, 37 Wellington St. W., Toronto, Ont., engr. Noted May 12, C.D.—May 20, E.N.-R.

★**Ont., Kitchener**—Syndicate, V. G. Cardy, interested, Mount Royal Hotel, Montreal, Que., plans new hotel, King and Queens Sts. $1,000,000.

Ont., Toronto—National Sanitorium Asso., 223 College St., plans by Chapman & Oxley, 372 Bay St., 3 story, fireproof, brick wall, addition to accommodate 124 patients at Weston Sanitarium, Weston. $400,000. Noted June 2, C.D.—June 10, E.N.-R.

Que., Montreal—Owner, c/o Maxwell M. Kalman, archt., 630 Dorchester St., making plans modern fireproof theater, Pourpart St. $200,000.

Que., Nicolet—Fahrique du Seminary de Nicolet making plans constructing brick, rein.-con. agricultural college, plain found. $150,000. Private plans.

Que., Quebec City—Pierre Levesque, archt., 115 St. John St., takes bids in July construcing school in St. Fidele Parish and school in St. Esprit Parish, both brick, steel, plain founds., for Roman Catholic School Comm. $230,000.

Que., St. Joseph D'Alma—Roman Catholic School Comm., plans by Lamontagne & Gravel, Chicoutimi, constructing brick, steel college, plain found. $150,000. Noted Apr. 1, C.D.—Apr. 8, E.N.-R.

BIDS ASKED

★**Conn., Bridgeport** — June 30, by J. G. Phelan, archt., 1336 Fairfield Ave., 5 story, 140x190 ft., brick, steel, rein.-con., stone hospital addition, Main St., for St. Vincent's Hospital, Sister Anna, supt., 2829 Main St. $500,000. Fletcher-Thompson, Inc., 1336 Fairfield Ave., engrs. Noted June 7, C.D.—June 10, E.N.-R.

Conn., Waterbury—M. Greenblatt, 33 Columbia Blvd., taking bids 4 story, brick, steel, granite apartment house, incl. air conditioning system, Cooke and Earl Sts. $150,000. F. J. Hyland, 460 West Main St., archt.

★**Ill., Chicago** — Wesley Memorial Hospital, 2449 South Dearborn St., taking bids (1st unit) constructing foundations and excavation, pilings, for hospital, Fairbanks Court, Chicago Ave. and Superior St. $2,000,000. Thielbar & Fugard, 520 North Michigan Ave., archts.

Ind., Indianapolis—Moynahan Constr. Co., 710 Union Title Bldg., K. R. Moynahan, pres., taking bids constructing 3 story, rein.-con., steel, brick apartment building, Linwood Dr. $200,000. Pierre & Wright, 906 Architects & Builders Bldg., archts.

N. J., Carteret—See "Contracts Awarded."

N. J., Englewood—See "Contracts Awarded."

N. J., Jersey City—Bergen Center Holding Corp., c/o A. Glickman, 191 Joralemon St., Brooklyn, N. Y., taking separate bids brick, theatre, office and store building, Glenwood and Bergen Aves. $200,000. W. Neuman & Son, 587 Summit Ave., archt. Noted June 16, C.D.—June 24, E.N.-R.

N. Y., Baldwin—See "Contracts Awarded."

N. Y., Brooklyn—See "Contracts Awarded."

N. Y., Elmhurst—See "Contracts Awarded."

N. Y., Flushing—See "Contracts Awarded."

N. Y., Forest Hills — See "Contracts Awarded."

N. Y., Hempstead—See "Contracts Awarded."

N. Y., Jamaica—See "Contracts Awarded."

N. Y., Jackson Heights—See "Contracts Awarded."

N. Y., Jamaica—See "Contracts Awarded."

N. Y., Kenmore—See "Contracts Awarded."

N. Y., Long Island City—See "Contracts Awarded."

N. Y., Maspeth—See "Contracts Awarded."

N. Y., Whitestone—See "Contracts Awarded."

Pa., Melrose—See "Contracts Awarded."

Pa., Upper Darby—See "Contracts Awarded."

CONTRACTS AWARDED

Calif., Palo Alto — Stanford University, Palo Alto, general contract reconstructing assembly hall, for school of business, university campus, to G. Wagner, 181 South Park St., San Francisco, about **$135,000**; mechanical and plumbing work, to J. H. Pinkerton, 927 Howard St.; electrical work, to R. M. Butcher, 1020 Sherwood St., San Jose. Bakewell & Weihe and A. Brown, Jr., Associates, 251 Kearny St., San Francisco, archts.

Calif., Stockton—Engineering Dpt. of Pacific Telephone & Telegraph Co., Telephone Bldg., San Francisco, 3 story, basement, 86x96 ft., Class "A," steel, concrete phone exchange building, Lindsay and San Joaquin Sts., to Dinwiddie Constr. Co., 210 Crocker Bldg., San Francisco, **$150,000.** Private plans. Noted Apr. 26, C.D.—Apr. 29, E.N.-R.

Ga., Augusta —J. B. Whitehead Estate, Augusta, altering and constructing 5 story, 76x267 ft., brick, rein.-con. addition to office building, concrete pile found., to Claussen-Lawrence, 1394 Gwinnett St. Sears, Roebuck & Co., 675 Ponce de Leon Ave., Atlanta, Ga., and West Arthington and South Homan Sts., Chicago, Ill., lessee. R. S. Fiske, Healy Bldg., engr. W. Irwin, S. F. C. Bldg., archt. Bids May 26, awarded June 4. **Noted June 3, C.D. —June 10, E.N.-R.**

Ill., Chicago—Northern Illinois College of Optometry, 4043 Drexel Blvd., general contract 3 story, basement, 60x125 ft. school, to B. J. Regnell Co., 1005 Belmont Ave.; structural steel, to Andrew Iron Wks., 5844 South Loomis St. Est. $250,000. Noted May 7, C.D.—May 13, E.N.-R.

Md., Baltimore—O. Eugene Adams, archt., 329 North Charles St., general contract 2½ story, basement, 130x150 ft. nursery and child's hospital, Woodbourne Ave., for Child's Hospital & Nursery, New Amsterdam Bldg., J. B. Goutrum, in charge, to Thos. Hicks & Son, 106 West Madison St., **$112,000.** Bids May 28. Noted May 24, C.D.

★**Mass., Cambridge**—Massachusetts Institute of Technology, Dr. K. T. Compton, pres., 69 Mass. Ave., School of Architecture Building, Charles River, to Stone & Webster Eng. Co., 90 Broad St., New York. Est. **$1,100,000.** Noted Apr. 22, C.D.—Apr. 29, E.N.-R.

Mass., Oak Hill — W. Gray, 31 Albermont Rd., Winchester, 30 brick and frame residences with garages, Oak Hill. Owner builds. Total est. exceeds **$150,000.** A. M. Krieder, 259 Walnut St., Newtonville (Newton), archt.

Mich., Midland—Michigan Bell Telephone Co., constructing 2 story, basement, 60x100 ft., brick, steel, concrete telephone exchange and service building, plain found., Larkin St., to F. C. Trier Constr. Co., Midland. Est. $125,000. Smith, Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts.

N. J., Brown's Mills—Deborah Sanitorium, completing 2 story, basement, 49x142 ft. with 40x84 ft. wing brick under block, stucco sanitorium, to William Tinker Co., 735 Cherry St., Phila., Pa. D. Sapowitz, 246 South 15th St., Phila., Pa., archt. Awarded June 13.

N. J., Carteret—Post Boulevard Realty Co., Post Blvd. and Main Ave., constructing group dwellings and tract development, day labor. To exceed **$150,000.** Owner will purchase materials.

N. J., Englewood — Irving Bienenstock, constructing apartment house, Chester Dwight and Tracey Places, separate contracts. To exceed **$200,000.** R. Cadieu, Cliffside Park, archt. Noted May 21, C.D.—May 27, E.N.-R.

N. J., Wickatunk—House of Good Shepherd, 2 story, cellar, 40x90 ft., 40x115 ft. and 40x173 ft., brick dormitory, to Edward M. Waldron Co., 40 Park Pl., Newark, **$250,000.** R. J. Reiley, 69 West 45th St., New York, archt.

N. Y., Baldwin—A. Oshrin, Forhurst Gardens, Baldwin, constructing group dwellings, day labor. **$150,000** or more. Owner will purchase materials.

N. Y., Brooklyn—Sauma Realty Corp., 863 68th St., constructing apartment, 750 67th St., separate contracts. **$150,000.** Owner taking bids. M. N. Weinstein, 93 Court St., archt. Noted May 20, C.D.—May 27, E.N.-R.

N. Y., Brooklyn—S. Smith, c/o Kurland, 26 Court St., altering heating, plumbing in apartment, 2729 Ocean Parkway, separate contracts now being awarded. **$40,000.** O. I. Silverston, 153 Pierrepont St., archt. Noted May 20, C.D.—May 27, E.N.-R.

N. Y., Brooklyn—School, c/o Rev. P. Kelaher, 2154 62nd St., constructing parochial school, 6102 Bay Parkway, to Patrick Const. Co., 464 5th Ave. Est. **$150,000.** Noted May 28, C.D.—June 3, E.N.-R.

N. Y., Brooklyn—Paulcyrek Corp., 1445 East 58th St., constructing group brick dwellings, 3803 Avenue H, day labor. **$150,000.** Owner will purchase materials. G. H. Suess, c/o owner, archt.

N. Y., Brooklyn—Cameo Gardens, Inc., 2283 East 17th St., constructing group brick dwellings with garages, 4342 Bedford Ave., day labor. **$150,000.** W. A. Lacerenza, 391 Fulton St., archt. Owner will purchase materials.

N. Y., Brooklyn—J. Dorment, 66 Court St., constructing group brick dwellings, 1813 Gerritsen Ave. and vicinity, day labor. **$150,000.** B. Driesler, 163 Remsen St., archt Owner will purchase materials.

N. Y., Brooklyn — Lincoln Plaza Apartments, Inc., 55 Liberty St., constructing 6 story apartment, 229 Lincoln Pl., separate contracts. **$200,000.** C. Kreymborg, 349 East 149th St., New York, archt. Noted May 26, C.D.—June 3, E.N.-R.

N. Y., Buffalo — General Hospital, Marine Trust Bldg., plumbing and heating for hospital, to J. Davis, Root Bldg.; electrical work, to Wipperman & Mitchell, 494 North Oak St. Noted June 4, C.D.—June 10, E.N.-R., under "Contracts Awarded."

N. Y., Elmhurst—C. J. Moss and B. Daniels, 74th St. and Calamus Ave., constructing group dwellings, 74th St. and Calamus Ave., day labor. **$150,000** or more. Owner will purchase materials.

N. Y., Flushing—Colesdero Realty Corp., 79-17 Roosevelt Ave., Jackson Heights, constructing group 2 story frame dwellings, 141st St. and North Hempstead Turnpike, day labor, **$150,000.** A. B. McNeil, c/o owner, archt.

N. Y., Flushing — A. L. Krauss, 161st St. and North Hempstead Turnpike, constructing group dwellings, 161st St. and North Hempstead Turnpike, day labor. **$150,000.** Owner will purchase materials.

N. Y., Forest Hills—A. Goodfriend & M. Schoenbergh, Kessel St. and Baldwin Ave., constructing group dwellings, Kessel St. and Baldwin Ave., day labor. **$150,000.** A. E. Allen, Garden City, archt. Owner will purchase materials.

N. Y., Forest Hills—Corporation, c/o A. A. Marjey, archt., 110 West 40th St., constructing group 2 story dwellings, Juno St. and Continental Ave., day labor. **$150,000.** Owner is purchasing materials. A. A. Marjey, 100 West 40th St., New York, archt.

N. Y., Hempstead—Floral Garden Homes, c/o A. San Fanandre, archt., 63 Emerson Pl., Valley Stream, constructing group dwellings on 109 lots, Elmont St., day labor. To exceed **$400,000.** Site acquired. Owners will purchase materials.

N. Y., Jackson Heights—M. Kalvarsky and I. Davis, 97th St. and 31st Ave., constructing group dwellings, 97th St. and 31st Ave., day labor. To exceed **$150,000.** Owner will purchase materials.

N. Y., Jamaica—L. Kurzok and N. Cooperstein, 119th Ave. and Merrick Rd., constructing group dwellings, 119th Ave. and Merrick Rd., day labor. To exceed **$150,000.** Owner will purchase materials.

N. Y., Jamaica — Burkard Homes, Inc., Richmond Hill, constructing group dwellings with garages, Midland Parkway and Chevy Chase St., day labor. To exceed **$150,000.** H. W. Johanson, c/o owner, archt. Owner will purchase materials.

N. Y., Kenmore—Kencleve Holding Corp., 807 Colvin Blvd., constructing apartment and residences for development, Marquette Ave., own forces, W. P. Goebel, c/o owner, in charge. To exceed **$150,000.** Site now being

Commercial Buildings (Continued)

cleared. A. Rumschik, 236 Oxford Ave., Buffalo, archt. Noted Apr. 28, C.D.—May 6, E.N.-R.

N. Y., Long Island City—Bloodgood Housing Co., 11 West 42nd St., B. Kommel, pres., constructing group 2 story dwellings, 29th Ave. and 29th St., day labor. **$150,000.** Owner will purchase materials. J. Unger, 39-01 Main St., Flushing, archt.

N. Y., Maspeth — Lorber Gardens Homes, 159-15 Northern Blvd., Flushing, constructing group brick dwellings, 52nd Dr. and 69th St., day labor. **$150,000.** Owner will purchase materials. S. M. Palm, 325-74-159th St., Flushing, archt.

N. Y., New York—E. Walker, 52 William St., altering heating, plumbing in 5 story store and apartment, to Hopper Constr. Co., 6 East 45th St. Est. **$40,000.** G. A. Schonewald, Grand Central Terminal, archt. Noted May 20, C.D.—May 27, E.N.-R.

N. Y., Rosedale (br. Jamaica)—Franksons Constr. Co., Hook Creek Blvd. and 118th St., constructing group 2 story frame dwellings, Hook Creek Blvd. and 118th Ave., separate contracts now being awarded. **$150,000.** L. Danancher, 161-19 Jamaica Ave., Jamaica, archt.

N. Y., Troy—J. R. Hampson, general contractor, Pittsfield, Mass., furnishing, driving steel piling for gymnasium on campus, for Rensselaer Polytechnic Institute, to Underpinning & Foundation Co., 155 East 44th St., New York. Noted May 13, C.D.—May 20, E.N.-R., under "Contracts Awarded."

N. Y., Utica—First Citizens Trust Co., 520 Seneca St., general contract business block and stores, Genesee St., to J. B. Jones, 236 Genesee St.; plumbng, to Hameline Co., Inc., 529 West Oriskany St. T. H. and O. Williams, White Bldg., Utica, archts. Noted May 5, C.D.—May 13, E.N.-R.

N. Y., Utica—W. Lehman, archt., c/o U. S. Realty & Investment Co. (owner), 972 Broad St., Newark, N. J., general contract 3 story, basement, 50x140 ft. department store, 243 Genesee St., to A. A. LaFountain, Beech St., Hackensack, N. J. Est. **$150,000.** Noted June 16, C.D.

N. Y., Whitestone—Agate Homes, c/o M. Shube, 16th Rd. and 150th St., constructing group dwellings, 16th Rd. and 159th St., day labor. **$150,000.** Owner will purchase materials. D. J. Levinson, 163-18 Jamaica Ave., Jamaica, archt.

O., Cleveland—Hotel Statler, S. Callis, New York, alterations changing Euclid front, pompeion room and air condition system in hotel, East 12th St. and Euclid Ave., to S. W. Emerson Co., 1836 Euclid Ave. Est. **$200,000,** Walker & Weeks, 2341 Carnegie Ave., archts.

O., Dayton—Van Buren Constr. Co., Keith Bldg., 2 and 3 story, basement, rein.-con., brick apartment and garage, plain founds., Arnold Pl. Owner builds. **$150,000.** H. L. Miller, archt. and constr. supt.

Pa., Bryn Mawr — Bryn Mawr College, 2 story, basement, gallery, 54x182 ft., brick, limestone, steel, science building for chemistry and geology, Upper Hockey Field north of main campus, to Barclay White Co., 22 North 36th St., Phila. (tentative award). Noted May 27, C.D.—June 3, E.N.-R.

Pa., Melrose—E. E. Ferguson, Hope and York Sts., Phila., 15 stone, frame residences, separate contracts. Est. **$150,000.**

Pa., Upper Darby—L. Mahoney, 6932 Market St., Upper Darby, brick apartment group, separate contracts and day labor. Est. **$150,000.**

Vt., Brattleboro—Western Mass. Theatres, Inc., 103 Bridge St., Springfield, Mass., brick, steel theatre, Main St., to George H. Reed & Co., Inc., 24 Franklin St., Greenfield, Mass. Est. **$150,000.** Noted Apr. 29, C.D.—May 6, E.N.-R.

Wis., Madison—Drs. Quisling, general contract 5 story, 48x70 ft., rein.-con., brick apartment, plain found., to J. H. Findorff & Son, 601 West Wilson St.***electrical work, to Harlof Electric Co., 606 State St.***rein.-con., to Concrete Eng. Co., 176 West Wisconsin Ave., Milwaukee. L. Monberg, 232 East Erie St., Chicago, Ill., archt.

Wis., Milwaukee—First Wisconsin National Bank, 734 North Water St., elevators for remodeling 16 story bank, North Water St., to Otis Elevator Co., 513 East Mason St., **$200,000***air conditioning, to Vilter Mfg. Co., 2217 South 1st St., **$15,000***roofing, to Winding Roofing Co., 110 East Wisconsin Ave., **$5,000.** Grand total $220,000. Pent house, to Siesel Constr. Co., 514 East Ogden St. Soon takes bids for elevator fronts, grilles, and marble work, about $25,000. E. J. Krause, 835 North Water St., archt.

INDUSTRIAL BUILDINGS

PROPOSED WORK

Ala., Tuscaloosa — LAUNDRY — Laundry Corp., c/o Fred Neilson, plans replacing laundry destroyed by fire. Est. about $40,000 with equipment. **Maturity indefinite.** Architect not appointed.

Calif., Los Angeles—PLANT—Rio Brewing Co., 674 Rio St., plans by A. R. Sedgley, 910 North Serrano Ave., plant addition. Maturity late in 1937 and probably separate contracts. Temporary structure has been placed on foundation constructed according to final plans. Est. $45,000.

Calif., Oakland—STORAGE, etc.—Western Auto Supply Co., 2355 Bway., plans altering and repairing fire damaged storage and distribution plant. Est. about $40,000 with equipment. Architect not appointed.

Calif., San Pedro — BAKERY — Di Carlo Baking Co., 331 West 11th St., altering 1 story, brick bakery building. Equipment to be installed. $100,000.

Calif., Shell Point—LABORATORY—Shell Oil Co., Shell Bldg., San Francisco, plans completed 1 story, rein.-con. laboratory addition. $40,000 or more. Engineering Dpt., c/o owner, engr.

Calif., Stockton—BOTTLING PLANT—Coca Cola Co., E. H. Wemyss, pres., plans 2 story, rein.-con. bottling plant, Wilson Way and Roosevelt St. $40,000 or more.

Conn., Hartford — FACTORY — Elias Glass Co., Corbin Ave., New Britain, plans completed by Mylchreest & Reynolds, 238 Palm St., 1 story, 100x160 ft., brick, steel factory, Granby St. $45,000.

Conn., Meriden — FACTORY — International Silver Co., 48 State St., completing plans 4 story, 40x145 ft., brick, concrete plating and finishing factory unit, Butler St. $75,000. Private plans.

Conn., Meriden — FACTORY — Connecticut Gas Products Co., Inc., G. J. Fouse, vice-pres., New Haven, brick factory unit, Main St. $100,000. Private plans.

Conn., West Haven (br. New Haven) — FACTORY—Armstrong Rubber Co., 475 Elm St., New Haven, revised plans by Fletcher-Thompson, Inc., 1336 Fairfield Ave., Bridgeport, and soon takes bids (selected list bidders), 3 story, 80x180 ft., rein.-con. rubber factory addition. $100,000.

Ill., Chicago—FACTORY—Binks Mfg. Co., 3124 West Carroll Ave., plans by Austin Co., 510 North Dearborn St., 2 story factory addition, Carroll St. $75,000.

Ill., Chicago—FACTORY—Chicago Pump Co., 2336 West Wolfram St., plans 2 story, basement, brick, factory, 4700 Foster Ave. Architect not appointed.

Ill., Chicago—WAREHOUSE—Layd Esther Co., 2012 Ridge Ave., Evanston, plans by A. Kahn, Inc., New Centre Bldg., Detroit, Mich., constructing 4 story, basement warehouse, in Clearing Industrial District. To exceed $40,000.

Ill., Winchester — POWER PLANT — See "Unclassified, under "Contracts Awarded."

Ind., Whiting—MANUFACTURING PLANT—Globe Roofing Products Co., A. Cobourn, pres., 176 West Adams St., Chicago, Ill., plans 1 story, 40x304 ft. factory, 1 story 45x93 ft. storage building, 1 story 40x100 ft. warehouse, 1 story 65x320 ft. finished goods house, boiler house, four 21,000 gal. asphalt stills, 20,000 gal. fuel oil tank, machine shop, B. & O. Ry. and Schrang Ave. Site selected. Private plans.

Ind., Whiting—FACTORY—Globe Roofing Products Co., 176 West Adams St., plans group 5 or 6 buildings, main building to be 1 story, 40x300 ft., also asphalt stills and storage tanks, Schrang St. Private plans.

Ia., Clinton—PLANT—E. I. DuPont Co., Wilmington, Del., has taken option on 200 acres land and surveys now being taken; if surveys are satisfactory will construct celophane plant here.

Ia., Ottumwa — PACKING PLANT — John Morrell & Co., plans 3 story, 60x160 ft. packing plant addition.

Ia., Pocahontas—GENERATING PLANT—Central Electric Co-Operative Assn., plans constructing and equipping generating plant. REA approved $75,000 allotment. Young & Stanley, Muscatine, engrs. Noted Mar. 2, C.D.—Mar. 4, E.N.-R.

Ky., Harrodsburg — DISTILLERY—Walker Bros., c/o W. P. Hatchett, Harrodsburg, plans 60 bbl. distillery. $40,000.

Ky., Lexington — FREIGHT DEPOT — Chesapeake & Ohio R. R., Transportation Bldg., Wash., D. C., plans freight depot. To exceed $45,000. Architect not appointed.

Ky., Lexington — STORAGE — Lexington Grocery Co., Rose and Water Sts., plans storage. To exceed $45,000 with equipment. Architect not appointed.

Ky., Paris — DISTILLERY—Bourbon Distilling Co., c/o D. E. Fowler, 408 Citizens Bank Bldg., Lexington, plans distillery, $100,000.

Me., New Portland—PLANT—Clark & Atwood Novelty Co., West New Portland, plans woodworking plant, West New Portland. Est. **$40,000** equipment. Fire rebuild. **Maturity indefinite.** Architect not appointed.

Mass., Fall River—PLANT—Lamport Mfg. Supply Co., 511 Bway., New York, purchased former plant building of American Printing Co., and will purchase and install loading and handling equipment. Est. about $40,000.

Mass., Mansfield—PLANT—Mansfield Japanery Lacquer Products, Mansfield, plans altering and repairing plant. To exceed $[illegible] Fire damage $75,000. Architect not appointed.

Mass., Wellesley — PRINTING PLANT — Poor's Printing Co., plans by E. T. Sanderson, Wiswall Circle, and soon takes bids 3 story, basement, 56x93 ft., brick, steel printing plant addition, concrete found., incl. heating, plumbing and electrical work. Babson's Park. To exceed $60,000 with equipment. Noted May 24, C.D.—May 27, E.N.-R.

Mass., Wrentham — PLANT — Winter Bros. Corp., Wrentham, soon lets contract 1 story, basement, 80x90 ft., brick, steel, manufacturing plant addition, concrete found., incl. sprinklers, heating, plumbing and ventilating. To exceed $40,000 with equipment. Electric work later. F. Burton Mitchell, 85 Mechanic St., Foxboro, archt.

Mich., Pontiac—FORGING PLANT—American Forging & Socket Co. plans by L. J. Heenan, 609 People's State Bldg., 1 story, 170x280 ft., brick, steel factory, plain found. $75,000.

Neb., Spencer—POWER HOUSE—Interstate Power Co., Dubuque, Ia., checking with Nebraska Railway Comn. as to value of Northern Nebraska Power Co. plant near Spencer which was put out of commission less than 1 year ago when concrete dam gave way. Interstate has option on this plant at $60,000 and plans to spend $190,000 to put it back in operation provided they find that it would be worth while. E. A. Wisco, c/o owner, operating engineer.

N. J., Newark—PLANT—Schnefel Bros., 684 South 17th St., plans plant. $50,000.

N. J., Newark — FACTORY — Amsterdam Holding Co., c/o Leo Flaster, 1172 Raymond Bldg., plans 2 story, 100x175 ft. factory, Amsterdam and Magazine Sts. To exceed $40,000.

★**N. J., Trenton**—PLANT—E. F. Fisher, gen. mgr., Fisher Body division of General Motors, plans 1 and 2 story plant along Reading R. R. Will also erect power plant. To exceed $5,000,000.

N. J., Unionville—PLANT—Hind Steel Co., 12146 Stanley Terrace, plans by F. Elasser, c/o owner, plant addition. $40,000.

N. Y., Albany—NEWSPAPER PLANT—Gander, Gander & Gander, archts., 17 Steuben St., Albany, soon let contract 3 story, basement, brick steel newspaper plant, plain found., South Pearl St., for Hearst Newspapers, Inc., c/o architects. Noted Nov. 19, C.D.—Nov. 26, E.N.-R.

N. Y., Buffalo—FACTORY—National Aniline & Chemical Co., Abbott Rd., recalled plans from prospective bidders for constructing Factory Building 441, Abbott Rd. Will revise plans. To exceed $40,000. Private plans. Noted June 4, C.D.—June 10, E.N.-R.

N. Y., Buffalo—CHEESE PLANT—Kraft Phoenix Cheese Co., 400 Rush St., Chicago, Ill., bids in July from selected list of bidders, constructing 2 story, basement plant and office building, Bailey Ave. To exceed $40,000. Private plans. Noted Feb. 15, C.D.—Feb. 18, E.N.-R.

N. Y., Lancaster—FACTORY—Hazel-Atlas Glass Corp., Lancaster, making plans constructing factory. $75,000. Private plans. Beman & Candee, 374 Delaware Ave., Buffalo, heating engrs. Noted June 3, C.D.—June 10, E.N.-R.

N. Y., New York — ICE PLANT — Vinco Realty Corp., 250 East 57th St., will not construct ice plant, 635 West 47th St. Project abandoned. D. Kaufman, 153 Center St., engr. and archt. Noted Mar. 4, C.D.—Mar. 11, E.N.-R.

N. Y., New York—GARAGE, etc.—Industrial Savings Bank, 51 Chambers St., bids in September, constructing garage and shop alterations, 28 Renwock St. $40,000 with equipment. Voorhess, Gmelin & Walker, 101 Park Ave., New York, archts.

N. Y., New York—STORAGE—D. P. Harris, Hardware & Mfg. Co., 99 Chambers St., plans by Jardine, Murdock & Wright, 347 Madison Ave., altering storage and showroom, 99 Chambers St. $40,000.

N. Y., New York—PLANT—Bowery Savings Bank, 110 East 42nd St., plans by Johnson & Porter, 6 East 45th St., altering heating, plumbing in manufacturing lofts and office, 161 6th Ave. $50,000.

N. Y., Queens Village — GARAGE, etc.—H. B. Levin, 625 Ocean Ave., Brooklyn, plans by M. A. Cantor, 373 Fulton St., 1 story, 140x154 ft. garage and shop, Austin St. and 63rd Ave. $40,000.

★**N. Y., Rochester** — PLANT — General Motors Corp., Detroit, Mich., plans by A. Kahn, Inc., New Center Bldg., Detroit, Mich., and takes bids during summer general contract manufacturing plant, Lexington Ave. and Mount Read Blvd. $500,000 with equipment. Baltimore & Ohio R. R. Co., H. A. Lane, chief engr., Baltimore, Md., will construct sidings and switches by own forces.

N. Y., Syracuse—WAREHOUSE—Greenway Holding Corp., Greenway Ave., soon takes bids 1 story, basement, 92x112 ft. warehouse, $40,000. National Biscuit Co., lessee. W. E. Lehman, 972 Broad St., Newark, N. J., archt.

N. Y., Syracuse—WAREHOUSE—National Biscuit Co., 449 West 14th St., New York, will not construct warehouse, Teall Ave. $125,000.

dustrial Buildings (Continued)

roject abandoned. L. Wirsching, c/o owner, ght. Noted Mar. 17, C.D.—Mar. 25, E.N.-R.

N. C., Durham—PACKING PLANT—R. J. eynolds Tobacco Co., Winston-Salem, plans story, basement, 120x150 ft. packing plant, ster St.

N. C., Reidsville — BOTTLING PLANT — co Cola Bottling Co. revised plans by J. Sawyer, Greensboro, bottling plant, l heating and elevator. F. De Grotte, idsville, owner. Est. about $40,000 with uipment.

N. C., Tuckertown — HYDRO-ELECTRIC LANT, etc.—Carolina Aluminum Co., Gulf dg., Pittsburgh, Pa., and Badin, N. C., nstructing 1,300 ft. long x 90 ft. high conete dam and will create lake covering 3,050 res in Stanly, Montgomery and several her counties adjoining, capacity of plant 000 hp. near here, on Yadkin River. Work ll be under supervision of company, S. A. pp, genl. supt.

N. D., Fargo — WAREHOUSE — Twin City holesale Grocery Co., 2285 University Ave., Paul, Minn., plans by Toltz, King & Day, e Pioneer Bldg., St. Paul, Minn., 2 story, ck, rein.-con. addition to warehouse. $40,-

O., Cincinnati—POWER PLANT—Chevrolet tor Co., 472 Smith Rd., plans power plant provements. $250,000.

O., East Liverpool — MILK PLANT — J. fford soon takes bids 1 story, 35x87 ft., odern milk plant, incl. latest in equipment d machinery departments for bottling, ading laboratory, washing and other byoducts, at nearby Glenmoor. $75,000. Priate plans.

O., Springfield — FACTORY — Springfield g. Co. soon takes bids 1 story, 35x90 ft., odern factory building. $40,000. Private ans.

★**O., Toronto** — STRIP MILL — Follansbee Bros., 3rd and Liberty Sts., Pittsburgh, plans slabbing and hot strip mill. $4,000,-Old works will be dismantled.

Ore., Portland — STAGE DEPOT — Pacific oyhound Lines, W. E. Travis, mgr., San ancisco, Calif., plans stage depot, incl. iting rooms, offices, 1 small store and ice shops and wide covered driveways, 125x200 ft. site, Southwest Taylor Ave. tween 5th and 6th Aves. $180,000. Propty purchased.

★**Pa., Ambler** — FACTORY — Keasby & Mattison Co., c/o Mr. A. Lesher, Ambler, ns brick, manufacturing plant. $600,000. ited Engineers & Constr. Co., Inc., 1401 ch St., Phila., engrs. Noted Apr. 16, C.D. -Apr. 22, E.N.-R.

★**Pa., Chester**—PLANT—Stone & Webster Engr. Corp., 49 Federal St., Boston, Mass., n takes bids 1 story, 60 ft. high, brick, ncrete, structural steel superstructure paper nufacturing plant addition, concrete found., Scott Paper Co., T. B. McCabe, pres., foot Market St. To exceed $1,000,000. Noted r. 23, C.D.—Apr. 29, E.N.-R.

Pa., Pittsburgh—WAREHOUSE—Atlantic & cific Tea Co., 6901 Lynn Way, soon lets ntract 5 story, 59x138 ft., brick, steel, tile rehouse. Private plans.

Pa., York—SHOWROOM, etc.—C. H. Heiges, Madison Ave., plans by H. R. Lenker, k. bids about July 10, 1 and 2 story, x87 ft., brick, steel, glass front, automoe showroom and service station, 1 story ch in rear and 2 story in front, incl. zzanine, West King St. Owner will purase and install complete machinery and uipment for auto service shop and sheet tal shop. $40,000.

S. C., Charleston and **Sumter**—BAKERIES Claussen's Baking Co, C. C. Brotherton, Broad St., Augusta, Ga., plans renew- ovens and other equipment in Condon keries at Charleston and Sumter. $35,000.

Texas—COTTON OIL MILL—Robstown Oil Co., Robstown, preliminary surveying for ation for construction of cotton oil mill nt in Rio Grande Valley Section. $100,000.

Tex., Alamo — CANNING PLANT — R. C. slinger, Sugarland, sketches 2 story, 40 ft., brick, rein.-con. canning plant, n found. $42,000. Private plans.

Tex., Brownsville—PLANT—Owner, c/o F. Hofmokel, Navigation Dist. Bldg., bid- deferred temporarily for 1 story, high ng-ed, 150x280 ft. fireproof cooling plant account of delay in construction of ware- se building, which is to house pre-cooling nt. $100,000. Private plans. Noted May C.D.—June 3, E.N.-R.

Tex., Dallas—BAKERY—Golman Baking Corinth and Park Sts., plans bakery, Kee and South Ervay Sts. $200,000.

★**Tex., Goldsmith** — GASOLINE PLANT— Phillips Petroleum Co., Bartlesville, Okla., ns gasoline plant, on 91 acre site. $1,750,- Site purchased.

★**Tex., Houston** — FACTORY—Continental Supply Co., c/o W. J. Morris, pres., Con- ental Bldg., Dallas, plans oil well supply nt on recently purchased 10 acre site, igation Blvd. and Buffalo Bayou, Green- d St. $1,000,000.

Utah, Salt Lake City — MECHANICAL BUILDING — Salt Lake Tribune, 145 South Main St., soon takes bids remodeling mechanical building housing paper presses. $50,000. W. E. Ware, Utah Savings & Trust Bldg., archt.

Wash., Seattle—PLANT—Fisher & Smith Bag Co., 1560 1st St., Seattle, plans plant and storage, South 1st and Massachusetts Aves. $40,000 or more. **Maturity indefinite.** Architect not appointed.

W. Va., Wheeling—WAREHOUSE, etc.—Bloch Bros. Tobacco Co., 4030 Water St., plans warehouse and office building. $200,000.

Wis., Green Bay—GARAGE—Geniesse & Connell, archts., Sheridan Bldg., soon let contract 1 story, 66x159 ft., steel garage addition, plain found., South Adams St., for Drisse Motor Co., 118 South Adams St.

Wis., Haugen — PLANT — Wissota Sand & Gravel Co., Hauger, plans repairing and altering plant. Est. about $40,000 with equipment. **Maturity indefinite.** Engineer and architect not appointed.

★**Wis., Milwaukee**—MILL—C. A. Krause Milling Co., South 43rd and West Burnham Sts., plans replacing mill, South 43rd St., destroyed by explosion. $1,000,000. Now purchasing new equipment.

Ont., Amherstburg—FACTORY—Church & Dwight, plans erecting and equipping additional factory buildings. $100,000. Special equipment to be installed.

Ont., Aylmer—PLANT—Aylmer Chemical Co., Ltd., J. C. Legg, mgr., making plans construction, manufacturing and refining plant. $50,000. Private plans.

Ont., Toronto—PLANT—Aluminum Co. of Canada, 158 Sterling St. making plans constructing plant, Perth Ave. To exceed $40,-000. Architect, c/o owner, archt. Site purchased.

Ont., Welland—FACTORY—Empire Cotton Mills, Queen St. East, N. Batchelder, mgr., plans equipping 1 story, 100x250 ft. addition to factory for manufacture of colored cloths.

Que., Montreal—PLANT—Canadian Tube & Iron Steel Co., Ltd., Ville Emard, Montreal, plans 60x100 ft., brick extension to plant, plain found., St. Patrick's St.

Que., Montreal—GARAGE—Canadian Pacific R. R., J. M. R. Fairbairn, ch. engr., Montreal, 1 story, basement, 184x290 ft., rein.-con. garage, Panet St. $100,000.

BIDS ASKED

Calif., Berkeley—PLANT—K. Theill, engr., 580 Market St., San Francisco, taking bids 35x50 ft., brick, steel plant addition, Ashby Ave. and 6th St., for San Francisco Sulphur Co., 636 California St., San Francisco.

Calif., San Jose—BOTTLING PLANT—See "Contracts Awarded."

Calif., Stege—PLANT—K. Theill, engr., 580 Market St., San Francisco, taking bids 35x90 ft., brick, steel frame plant addition, for Stauffer Chemical Co., 636 California St., San Francisco. Noted June 17, C.D.

Idaho, Golden—MINING DEVELOPMENT, etc.—See "Contracts Awarded."

Ill., Chicago—FACTORY—Chicago Printed String Co., 2320 West Logan St., taking bids constructing factory addition at Schubert and Holly Aves. $75,000. A. S. Alschuler, 28 East Jackson Blvd., archt. Noted June 11, C.D.—June 17, E.N.-R.

Ill., Morton Grove—PLANT—Kwikon Co., 626 West Jackson Blvd., Chicago, taking bids on revised plans constructing factory, Railroad Ave. $70,000. S. Minchin, 4339 North Claremont Ave., Chicago, archts. Noted June 4, C.D.—June 10, E.N.-R.

N. Y., Burt—CANNING PLANT—See "Contracts Awarded."

N. Y., New York—SHOP, etc.—See "Contracts Awarded."

N. Y., Port Ewen—WAREHOUSE—Hercules Powder Co., Wilmington, Del., taking bids (selected list bidders) constructing 1 story, 50x127 ft. warehouse.

S. C. Pacolet—PLANT MODERNIZATION—See "Contracts Awarded."

Tex., Uvalde — BOTTLING WORKS — Dr. Pepper Bottling Works, c/o B. M. Price, soon lets contract 2 story, 40x60 ft., hollow tile, stucco, rein.-con. bottling unit, concrete pile found. $40,000. Noted June 9, C.D.—June 17, E.N.-R.

Ont., Sudbury—ENGINE HOUSE—Canadian National Rys., T. T. Irving, ch. engr., Union Station, Toronto, taking bids 1 story, 3 stall, rein.-con. engine house. $40,000.

CONTRACTS AWARDED

Calif., Lodi—WINERY—Eastside Winery, rein.-con. sherry room and dry storage quarters, to G. Wallace, Escalon, **$38,500,** exclusive of equipment.

Calif., Los Angeles—STORAGE, etc.—National Screen Service, 1922 South Vermont Ave., 2 story, Class C, rein.-con. building to house film and vaults, offices and storage and shipping space and sprinkler system, 2020 South Vermont Ave., to Calhoun-Hastings, 1150 North Las Palmas Ave., about **$50,000.** Awarded June 9.

Calif., North Hollywood — MARKET — Ralphs Grocery Co., 926-7th St., Los Angeles, 1 story, mezzanine, 70x205 ft., rein.-con. market, steel overhead doors, etc., 4821 Lankershim Blvd., to S. N. Benjamin, 716 East 16th St., Los Angeles, **$43,810.** Awarded June 7. Noted June 3, C.D.—June 10, E.N.-R.

Calif., San Francisco — SERVICE STATIONS—Union Oil Co., 220 Montgomery St., 2 steel super-service stations, 1 at 3rd St. and Evans Ave. and other at Golden Gate Ave. and Webster St., to F. C. Stolte, 1495 San Antonio Ave., Alameda, to exceed $40,-000. Noted Apr. 7, C.D.—Apr. 15, E.N.-R.

Calif., San Jose—BOTTLING PLANT—P. W. Poole, c/o C. McKenzie, archt., Twohy Bldg., 2 story, 76x150 ft., wood frame, stucco, corrugated iron bottling plant, Stockton Ave., day labor.

Calif., Santa Rosa — STORAGE, etc. — C. Caulkins, archt., Rosenberg Bldg., 1 story, mezzanine, 85x180 ft., storage and store building, for Stone Furniture Co., Santa Rosa, to W. D. Rapp, 1413-17th St., **$39,010.** Noted May 26, C.D.—June 3, E.N.-R.

Conn., Greenwich — PLANT — Conde Nast Publications, Inc., Post Rd., 1 story, 100x150 ft., concrete, steel publishing plant addition, Post Rd., to Vuono Constr. Co., 1 Atlantic St., Stamford. Est. **$500,000** with equipment. Bids May 28. Noted May 20, C.D.—May 27, E.N.-R.

Conn., Hartford — PLANT — Fuller Brush Co., 3580 Main St., 1 story, 128x240 ft., brick storage building, Main St., to R. G. Bent Co., 93 Edwards St., to exceed **$40,000.**

Conn., New Haven—LAUNDRY—Majestic Laundry Co., 63-69 Lock St., general contract 2 story, basement, 40x115 ft., brick, steel, concrete laundry addition, Ashmun and Lock Sts., to J. N. Leonard Co., 902 Chapel St. Est. **$40,000.** J. Weinstein, 341 State St., archt.

Idaho, Golden—MINING DEVELOPMENT, etc.—Buffalo Idaho Mining Co., constructing mining development and ore mill, day labor and separate contracts. To exceed **$50,000.**

Ill., Chicago — GARAGE — A. Sexton, 500 Orleans St., 1 story garage, to 110-130 West Erie St., to Patterson & Hartwich, 105 West Adams St. Est. **$40,000.** L. E. Russell, 105 West Adams St., archt.

Ill., Chicago — WAREHOUSE — Campbell Soup Co., 35th and Rockwell Sts., general contract top addition to warehouse, to Robert Regan Constr. Co., 228 North LaSalle St. Est. **$50,000.** Battery & Kipp, 231 South LaSalle St., archts.

Ill., East St. Louis—FOUNDRY—Key Co., 2700 McCauland Ave., general contract 1 story, 247x320 ft., brick, steel, concrete steel foundry, to Fruin-Colon Contg. Co., 502 Merchants-Laclede Bldg., St. Louis, Mo. Est. **$350,000** with equipment. Noted May 7, C.D. —May 13, E.N.-R.

Ill., Galesburg — ROUNDHOUSE — Chicago, Burlington & Quincy R. R. Co., A. W. Newton, ch. engr., 547 West Jackson Bldg., Chicago, addition to roundhouse, incl. 6 new stalls and extending 3 stalls, to V. Jobst Constr. Co., Lehmann Bldg., Peoria. Est. **$80,000.**

★**Ill., McCook** — PLANT — Electric Motive Corp., McCook, masonry and concrete contract for 1 story, 360x816 ft. plant addition, to J. S. Thompson Co., 8145 Kimbark St., Chicago***structural steel, to American Bridge Co., 208 South LaSalle St., Chicago***steel erection, to L. P. Friestedt Co., 109 North Dearborn St., Chicago. Est. exceeds **$500,000.** A. Kahn, Inc., New Centre Bldg., Detroit, Mich., archt.

Ill., Rockford — PLANT — Rockford Screw Products Co., 2501 North 9th St., general contract 1 story, 63x275 ft., brick, concrete plant addition, 2501 North 9th St., to Linden & Sons, Inc., 1102 10th St. Est. **$85,000** with equipment.

Ill., Rock Island—ROUNDHOUSE—Chicago, Burlington & Quincy R. R., A. W. Newton, ch. engr., 547 West Jackson Blvd., Chicago, concrete, brick roundhouse, with 6 stalls to replace existing structure, to G. A. Johnson & Sons, 740 North Rush St., Chicago. Est. **$35,000.** Noted Apr. 12, C.D.—Apr. 15, E.N.-R.

Ind., Anderson — PLANT — Delco-Remy Division of General Motors Corp., Anderson, general contract 1 story, 240x520 ft. manufacturing plant and 2 story, locker house and recreational building, to A. J. Glaser, 701 South Lincoln St., Muncie. Bids June 4, awarded June 7. Private plans.

Ky., Louisville—PLANT—Liberty Eng. & Mfg. Co., 325 Roland St., plant, to Austin Co., 16112 Euclid Ave., Cleveland, O. Est. **$60,000.**

Md., Baltimore—PLANT—Mutual Chemical Co. of America, Block and Willis Sts., plant, to Davis Constr. Co., 9 West Chase St. Est. **$45,000.**

Md., Baltimore—GARAGE—W. J. Price, 103 West 39th St., 1 story, 118x208 ft., concrete, steel, garage, concrete founds., 3800 Canterbury Rd., to Consolidated Eng. Co., 20 East Franklin St. Est. $40,000. Private plans.

Md., Sparrows Point—SERVICE—Bethlehem Steel Corp., 1 story, 30x100 ft. service build-

Industrial Buildings (Continued)

ing, to M. A. Long Co., 10 West Chase St., Baltimore. Est. **$30,000.** Private plans.

Mass., Fall River—WAREHOUSE—Congdon & Carpenter Co., 405 Promenade St., Providence, R. I., general contract 2 story, 200x200 ft., brick, steel, rein.-con. warehouse, to O. D. Purington Co., Inc., 49 Westminster St., Providence, R. I. Est. **$45,000.** Noted June 7, C.D.—June 10, E.N.-R.

Mass., Fitchburg — WAREHOUSE — Crocker Burbank & Co., Assoc., 545 Westminster St., 2 story, 100x240 ft., rein.-con. warehouse addition, incl. plumbing and heating, at Mill 9, to W. J. Handley Co., 47 Nockege St.*** structural steel, to Eastern Bridge & Structural Co., 88 Crescent St., Worcester***reinforcing steel, to Truscon Steel Co., 38 Chauncey St., Boston. Est. **$40,000.** Private plans.

Mass., South Boston — GARAGE — R. S. Brine Transportation Co., 194 West 1st St., 1 story, 69x109 ft., brick, steel, concrete garage, concrete found., incl. heating, plumbing and electrical work, Cypher St., to Columbia Constr. Corp., 100 Milk St., Boston. Est. exceeds **$40,000** with equipment. C. F. Springall, 50 Park St., Malden, archt.

Mo., Kansas City — STOREHOUSE, etc. — Missouri Pacific R. R. Co., S. L. Wonson, ch. engr., Missouri Pacific Bldg., St. Louis, removing two 50x25 ft. bays and constructing two 1 story, 32x59 ft. bays on west side of storehouse and altering present buildings at East Bottoms District, to S. Patti Constr. Co., 1114 Bway., Kansas City, Mo.

Mo., St. Louis—PLANT—Benjamin Moore & Co., 1630 South 2nd St., general contract 1 and 2 story, part basement, 61x66 ft. varnish building and shipping room, 2nd St. and Lafayette Ave., to Gamble Constr. Co., 620 Chestnut St.***electrical work, to Rock Electric Co., 1622 Chestnut St.***heating, to Sodemann Heating & Power Co., 2306 Delmar Blvd.***automatic sprinkler, to Crowder Bros., Inc., 2212 Walsh St. Bids May 25. Noted May 18, C.D.—May 20, E.N.-R.

Mo., St. Louis — FREIGHT TERMINAL — Merchants Motor Freight, Inc., 631 South Bway., general contract 1 story, 38x122 ft. brick, concrete freight terminal, 318-24 South 4th St., to Baerveldt & Honig Constr. Co., 524 Wainwright Bldg. Bids May 18.

Mo., St. Louis—WAREHOUSE, etc.—Lowell Bleachery, 7710 Polk St., 1 story, 82x122 ft. brick, warehouse addition and 18x55 ft. garage, 7707-09 Polk St., to Bohm Co., 5800 Easton Ave. Saum Architects, 713 Chestnut St., archt.

N. J., Clifton—PLANT—Clifton Paperboard Co., constructing plant, to Austin Co., 19 Rector St., New York. General contractor awards 250 tons structural steel, to J. T. Ryerson & Son, 203 Woodside Ave., Jersey City.

N. J., Dunellen—STILL BUILDING—Allied Asphalt & Mineral Corp. constructing new still building and steel frame, brick repairs to present buildings, to F. S. Closson, 450-7th Ave., New York. Est. **$50,000.** General contractor awards contract for steel, to Crowell Eng. Co., Metuchen.

N. J., Hoboken — PLANT — Publication Corp., 580 5th Ave., New York, constructing plant, to Otto Randolph, 53 West Jackson Blvd., Chicago, Ill. Est. **$50,000.** Bids May 28. Noted May 4, C.D.—May 6, E.N.-R.

N. Y., Buffalo—FACTORY—National Aniline & Chemical Co., Abbott Rd., structural steel for Building 230, to Lackawanna Steel Constr. Co., Walden Ave., Cheektowaga.

N. Y., Buffalo—PLANT—National Aniline & Chemical Co., Abbott Rd., foundations for Factory Buildings 229 and 230, Abbott Rd., to Hydro Constr. Co., Stock Exchange Bldg. Soon takes bids for superstructure. Noted June 4, C.D.—June 10, E.N.-R., under "Contracts Awarded."

N. Y., Buffalo—BOILER HOUSE—Chevrolet Motor Co., c/o General Motors Corp., East Delavan Ave., constructing boiler house, East Delavan Ave., to Lakeland Eng. & Constr. Corp., Stock Exchange Bldg. Est. **$10,000.** Bids June 4. Noted May 28, C.D.—June 3, E.N.-R.

N. Y., Burt—CANNING PLANT—Burt Cold Storage & Packing Co., Burt, constructing 2 story, basement, 60x180 ft. canning plant, own forces. **$55,000.** Private plans. Owner will purchase materials.

N. Y., Corinth—FACTORY—Cluett Peabody Co., 433 River St., factory addition, Maple St., to F. Champagne, 71 Division St., Ballston Spa. Est. **$50,000.** Noted June 2, C.D.—June 10, E.N.-R.

N. Y., Dresden—STEAM GENERATING PLANT—New York State Electric & Gas Corp., Penn Yan, coal conveying equipment for steam generating plant, to Link Belt Co., 2045 Hunting Park Ave., Phila., Pa.; grading and railroad work to Railroad Maintenance Co., Bound Brook, N. J. Noted June 15, C.D.—June 17, E.N.-R., under "Contracts Awarded."

N. Y., Fredonia—SERVICE and GARAGE—Lakeland Eng. & Constr. Corp., general contractors, Exchange Bldg., Buffalo, structural steel for service building and garage, for Niagara, Lockport & Ontario Power Co., Electric Bldg., to Central Steel Constr. Co., Miller Ave., Buffalo; rein. steel, to Bethlehem Steel Co., Lackawanna. Noted June 3, C.D.—June 10, E.N.-R., under "Contracts Awarded."

N. Y., Fredonia—SERVICE—Niagara Lockport & Ontario Power Co., Electric Bldg., Buffalo, plumbing and heating for service building, Norton Pl., to Boch & Ludwig, Fredonia. Noted June 16, C.D.—June 24, E.N.-R., under "Contracts Awarded."

N. Y., Jamestown—FACTORY—Jamestown Wood Finishing Co., 125 Blackstone Ave., general contract factory addition, Blackstone Ave., to Haas Constr. Co., 1001 Monroe St.*** plumbing, to Jamestown Plumbing & Heating Co., 120 Cherry St.***heating, to Sans Co., 57 Windsor St.***elevator, to Otis Elevator Co., 775 Main St., Buffalo. Est. **$40,000.** Noted June 1, C.D.

N. Y., Lancaster—FACTORY—G. C. Driscoll Constr. Co., general contractors, Lancaster, structural steel for factory, West Drullard Ave., for Hazel Atlas Glass Corp., Wheeling, W. Va., to Bethlehem Steel Co., Bethlehem, Pa. Est. **$77,000.** Noted June 16, C.D.—June 24, E.N.-R., under "Contracts Awarded."

N. Y., Lancaster—FACTORY—G. C. Driscoll Constr. Co., general contractors, Lancaster, brick, concrete stack for factory, West Drullard Ave., for Hazel-Atlas Glass Corp., Wheeling, W. Va., to Wiederholt Co., St. Louis, Mo.; sprinkler system, to Globe Automatic Sprinkler Co., Ellicott Sq. Bldg., Buffalo. Noted June 17, C.D.—June 24, E.N.-R. under "Contracts Awarded."

N. Y., Maspeth—FACTORY—Hibro Realty Co., 57-46 Flushing Ave., constructing 2 story factory, 59th St. and 59th Dr., separate contracts now being awarded. **$40,000.** S. Goldsmith, 84 Livingston St., archt. Noted May 24, C.D.—May 27, E.N.-R.

N. Y., Newburgh—GARAGE—J. A. Fogerty, Inc., general contractors, Newburgh, structural steel for garage, warehouse and bottling plant, Bway., for Coco Cola Co., 431 East 165th St., New York, to Belmont Iron Wks., 44 Whitehall St., New York. Total est. **$85,000.** Noted May 17, C.D.—May 20, E.N.-R., under "Contracts Awarded."

N. Y., New York—FACTORY—H. Phillips Estate, 465 East 57th St., general contract altering 8 story factory and office building, 659-663 5th Ave., to Barr, Irons & Lane, 420 Lexington Ave. Est. **$40,000.** Noted May 26, C.D.—June 3, E.N.-R.

N. Y., New York—SHOP, etc.—Rohliers Realty Corp., Butterick Ave. and Graff St., 1 story shop, garage and gas station, Butterick Ave. and Graff St., separate contracts. **$40,000** with equipment. W. A. Giesen, 502 East Tremont Ave., archt.

N. Y., Poughkeepsie—GARAGE, etc.—Central Hudson Gas & Electric Corp., 50 Market St., garage and storage building, South Rd., to E. V. Anderson, 25 Market St. Est. **$40,000.** General Contractor purchased structural steel from Hudson Valley Builders Steel Co., 178 Cottage St.

N. Y., Tonawanda — PLANT — Chevrolet Motor Co., Div. General Motors, 3044 Grand Blvd., Detroit, Mich., boilers for plant, to Union Iron Wks., 1500 Cascade St., Erie, Pa. Noted June 15, C.D.—June 17, E.N.-R., under "Contracts Awarded."

N. Y., Tonawanda — OIL REFINERY — Frontier Fuel Oil Corp., Ellicott Sq. Bldg., Buffalo, tanks, pumps, furnaces, to Oertel Constr. Co., 28 West Chippewa St., Buffalo. Est. **$100,000.**

N. C., Enka — WAREHOUSE — American Enka Corp., constructing warehouse, to Potter & Shackelford, Greenville, S. C., **$37,958.** Private plans. Bids June 9.

N. C., Winston-Salem—PLANT—Piedmont Leaf Tobacco Co., C. T. Joyce, pres., 4 story, 70x150 ft., brick, steel addition to present 6 story redrying plant, East 4th and Vine Sts., to Frank L. Blum Co., Winston-Salem, to exceed **$40,000.**

O., Cincinnati — FACTORY — Wm. Powell Co., 2525 Spring Grove Ave., constructing factory, to Penker Constr. Co., 1030 Summer St. Est. **$100,000.**

O., Cincinnati—PLANT—Coca Cola Bottling Co., 520 East 5th St., constructing bottling plant, to Ferro Concrete Constr. Co., 3rd and Elm Sts.***heating, to Peck, Hannaford & Briggs, Court and Sycamore Sts.***boiler, to Babcock & Wilcox, 85 Liberty St., New York. Est. exceeds **$40,000.** Noted Apr. 27, C.D. Apr. 29, E.N.-R.

O., Cleveland—INSPECTION BUILDING—White Motor Co., W. H. Craig, engr., East 79th St., 1 story, 90x144 ft., brick, steel inspection building, 811 East 93rd St., to George A. Rutherford Co., 2725 Prospect Ave. Est. **$60,000.** Private plans.

Ore., Hood River—COLD STORAGE PLANT—Hood River Apple Growers Assoc., H. O. Bateman, mgr., 4 story 160x362 ft. new cold storage building, to L. H. Hoffman, 715 West Columbia St., Portland. Est. **$350,000** with equipment. Excavation in progress by Lofts & Son, Hood River. H. P. Henschien, 59 East Vanburen St., Chicago, Ill., archt. Noted Mar. 25, C.D.—Apr. 1, E.N.-R.

★**Pa., Braddock**—STEEL MILL — Carnegie Illinois Steel Corp., Carnegie Bldg., Pittsburgh, sewer lines, excavation, foundations and concrete work for 48 in. slabbing mill at Edgar Thompson plant, 1,000,000 tons annual capacity, to Rust Eng. Co., Cameron Bldg., Pittsburgh; furnishing, installing and erecting equipment at above plant, to Mesta Machine Co., West Homestead, Pittsburgh, United Eng. & Fdry. Co., 1st Natl. Bank Bldg., Pittsburgh, and the Continental Roll & Steel Fdry. Co., 144th St. and Railroad Ave., Chicago, Ill. Est. to exceed **$15,000,000.** Noted Jan. 22, C.D.—Jan. 28, E.N.-R.

★**Pa., Clairton** — STEEL MILL — Carnegie Illinois Steel Co., Carnegie Bldg., Pittsburgh, furnishing, installing and erecting equipment at Irvin Works, incl. 80 in. continuous hot strip mill, 3 cold reduction mills and 9 temper pass mills, to Mesta Machine Co., West Homestead, Pittsburgh, United Eng. & Fdry. Co., 1st National Bank Bldg., Pittsburgh, E. W. Bliss Co., 53rd St. and 2nd Ave., New York, and Continental Roll & Steel Fdry. Co., 144th St. and Railroad Ave., Chicago, Ill. Total est. **$60,000,000.** Noted May 18, C.D.—May 20, E.N.-R., under "Contracts Awarded."

Pa., Clairton—BENZOL REFINING PLANT—Carnegie-Illinois Steel Corp., Clairton, benzol refining plant, to Semet Solvay Eng. Co., 40 Rector St., New York. Will be largest plant of its kind.

Pa., Pittsburgh — MANUFACTURING — American Brake Shoe & Fdry. Co., 2800 Preble St., general contract manufacturing building (repair), steel sash, concrete work, painting and replacing steel siding, to Cuthbert Bros. Co., Inc., Bessemer Bldg. W. F. Fraula, Park Bldg., archt.

Pa., Pittsburgh — SPINNING PLANT — P. McGraw Wool Co., P. McGraw, pres., 1450 River Ave., 3 story, 28x80 ft., brick, steel spinning plant, to Cuthbert Bros. Co., Inc., Bessemer Bldg. Noted Apr. 1, C.D.—Apr. 8, E.N.-R.

Pa., Venango—GREASE and COMPOUNDING BUILDING—Socony Vacuum Oil Co., Inc., 26 Broadway, New York, R. T. Perry, dist. mgr., 2 story, basement, 42x60 ft., brick, steel, rein.-con. grease and compounding building addition, to L. O. Bouquin, 13 East 1st St., Oil City. Private plans.

S. C., Newberry—MILL, etc.—Kendall Co., constructing mill building, 3 brick warehouses, elevators, erecting 2 new residences, painting, granite walls, etc., to Potter & Schakelford, Greenville. Est. **$60,000.** Lockwood Greene, Spartanburg, engrs.

S. C., Pacolet—PLANT MODERNIZATION—Pacolet Mfg. Co., Pacolet, plant modernization program, day labor and separate contracts. To exceed **$40,000.** Owner now purchasing equipment.

S. C., York—MILL—Neely Cotton Mills, modernization of textile mill, separate contracts now being awarded. **$100,000.**

Tex., Houston—PLANT—Shaffer Tool Wks., W. D. Shaffer, pres., Brea, Calif., 1 story, 150x300 ft. oil well supply plant, Navigation St., to S. D. Cook, 3769 Farbar St. **$55,000.** Awarded June 14. Concern moving plant from Los Angeles, Calif., to here.

Utah, North Salt Lake—PLANT—Cudahy Packing Co., 221 North LaSalle St., Chicago, Ill., altering packing plant, to Christensen-Gardner, Inc., 210 Terminal Bldg., Salt Lake City, approximately **$50,000.**

Va., Orange—PLANT—Virginia Rayon Mills, Orange, constructing 2 story, 70x120 ft. plant, separate contracts awarded. Est. exceeds $40,000. E. E. Burruss, Charlottesville, engr. Noted Apr. 26, C.D.—Apr. 29, E.N.-R.

Wis., LaCrosse—WAREHOUSE, etc.—Service Transfer & Storage Co., 3rd and Cass Sts., 1 story, basement, 100x150 ft. warehouse, office building, separate contracts awarded. **$45,000.** Noted Apr. 21, C.D.—Apr. 29, E.N.-R.

Wis., Milwaukee—FACTORY—Perfex Corp., 415 West Oklahoma Ave., altering and constructing 1 story, 40x140 ft., brick factory addition, West Oklahoma St., to Permanent Constr. Co., 2712 North Holton St. H. W. Tullgren, 1234 North Prospect Ave., archt.

Man., Winnipeg—PLANT—Canada Dry Ginger Ale, Inc., 122 East 42nd St., New York, constructing addition on Watt St., to Clayden Constr. Co., 259 Ste. Anne's Rd., St. Vital, Man.; boilers, to Vulcan Iron Wks., Winnipeg. Bottling equipment to be installed. Noted May 21, C.D.—May 27, E.N.-R.

Man., Winnipeg—FILM EXCHANGE—Hudson Bay Co. Ltd., Winnipeg, 1 story, basement, 68x140 ft., stone, brick, rein.-con. film exchange building, plain found., Memorial Blvd., to Carter-Halls-Aldinger Ltd., Royal Bank Bldg. Est. **$100,000.** Green, Russell & Ham, 202 Film Exchange Bldg., archts.

★**Ont., Cornwall** — FACTORY—Courtaulds (Canada), Ltd., Cornwall, constructing factory, to Foundation Co. of Canada, Ltd., 1538 Sherbrooke St. W., Montreal, Que. Est. **$2,500,000.** Work in connection with $3,000,000 plant extension program. Noted June 11, C.D.—June 12, E.N.-R.

SEARCHLIGHT SECTION

EMPLOYMENT : BUSINESS : OPPORTUNITIES : EQUIPMENT — USED or RESALE

RATE: 40 cents a line or fraction

OFFICIAL PROPOSALS

COPY: 5 P.M. Tuesday for next issue

Official notices of bids wanted on construction and related work, equipment and material for government, state, municipal departments and private enterprises.

OFFICIAL PROPOSALS

Bids: July 13. (321)

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, ALBANY, N. Y., until one o'clock p. m., daylight saving time, on Tuesday, JULY 13, 1937, for the construction and reconstruction of highways in the following counties:

CONSTRUCTION

County	Deposit required	Type	Miles
Chenango (Cons. & Recons.)	$5,000.00	20′ & Var. BM MM. Opt. including 58′ I-Beam and 20′ Slab	0.40
Onondaga	3,000.00	18′ Gravel: Bit. Treated	3.69
Schuyler	2,400.00	18′ Gravel: Bit. Treated	2.00
Queens	2,500.00	Service Roads & Misc. Work	—

RECONSTRUCTION

Allegany	1,500.00	36′ I-Beam M.M.O. Appr.	0.11
Erie	14,500.00	20′ — 22′ Bit. Mac. MM. Type 3	7.21
Greene	11,000.00	20′ Bit. Mac. MM. Opt.	7.92
Schuyler	2,900.00	Concrete	0.34
Washington	7,900.00	20′ Bit. Mac. MM. Type 3 including 185′ truss with two 80′ Girder Approach spans	0.24
Warren	7,500.00	20′ Bit. Mac. Mixed in Place (Retread)	4.00
Westchester	22,000.00	40′ 46′ Concrete 9″ including Multiple Concrete Arch, total length 924′ & 40′ I-Beam	0.80

Maps, plans, specifications, and estimate of cost may be seen and proposal forms obtained at the office of the Division of Highways in Albany, N. Y., and at the office of the District Engineers in whose districts the roads are located, upon the payment of Five Dollars ($5.00) for plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. No refund will be made on plans, specifications or proposal forms. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Building, Worth and Center Streets, New York City. The addresses of the District Engineers and Counties in each district will be furnished upon request.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions applying to projects financed with federal funds.

Proposal for each highway or contract must be submitted in a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the New York State Department of Public Works, Division of Highways, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Sub. 2, Sec. 38 of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Sec. 38 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten per-centum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance to the Highway Law, the amount of the bidding check will be returned when fifteen per-centum of the contract work has been completed.

OFFICIAL PROPOSALS

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows: In New York City: Skilled Labor, eighty cents per hour; Intermediate Grade Labor, seventy-five cents per hour; Unskilled Labor, seventy cents per hour; in the Counties of Nassau, Suffolk and Westchester: Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, sixty-five cents per hour; in the Counties of Dutchess, Ulster, Orange and Sullivan, seventy-five cents per hour for Skilled Labor; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, fifty cents per hour with the exception of Orange County which rate is sixty cents per hour; and in all other counties other than above, Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, forty-five cents per hour, unless shown otherwise in the itemized proposal.

The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Sub-division d, of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

FRED'K STUART GREENE,
Supt. State Dept. Public Works.

Bids: June 29. (326)

Grade Crossing Elimination

DEPARTMENT OF PUBLIC WORKS
STATE OF MARYLAND
STATE ROADS COMMISSION
WORKS PROGRAM GRADE CROSSING PROJECT

Under the Provisions of the Emergency Relief Appropriation Act of 1935 SEALED PROPOSALS for construction of Grade Elimination as follows:

BALTIMORE COUNTY, CONTRACT B-108-1-421—Federal Aid Project WPGS-26-D. Construction of a triple 65′0″ span, steel I-beam bridge with concrete substructure and concrete floor, providing a 40′ roadway and 1-5′ sidewalk; over the tracks of the Western Maryland Railway Company, on the road from Reisterstown to Hampstead at Glen Morris.

The Employment Agency for furnishing labor on the above project is, Maryland State Employment Service, 21 W. Chesapeake Ave., Towson, Md.

The minimum hourly wage to be paid by the contractor on the above project shall be for "Unskilled Labor" $0.35; "Intermediate Grade" $0.45; and for "Skilled Labor," $0.56.

The attention of bidders is directed to the Special Provisions covering the subletting and assigning of contract and to the use of materials.

will be received by the State Roads Commission at its offices, Federal Reserve Bank Building, Calvert and Lexington Sts., Baltimore, Maryland, until 12 M. on the 29th day of June, 1937, at which time and place they will be publicly opened and read. QUALIFICATION OF BIDDERS REQUIRED.

Bids must be made upon the blank proposal form which, with specifications and plans will be furnished by the Commission upon application and cash payment of $1.00, for each separate project, as hereafter no charges will be permitted.

No bids will be received unless accompanied by a certified check, payable to the State Roads Commission of Maryland, as required by Sec. 6, Chapter 539, Acts of 1931, of the amount as set forth in the proposal form.

The successful bidder will be required to give bond, and comply with the Acts of the General Assembly of Maryland, respecting contracts.

The Commission reserves the right to reject any and all bids.

BY ORDER of the State Roads Commission this 15th day of June, 1937.

L. H. STEUART, Secretary. H. E. TABLER, Chairman.

OFFICIAL PROPOSALS

U. S. Government

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 17, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 29, 1937, for the *construction of the U. S. Agriculture and P. O. Building, at Okolona, Miss.* Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (324)

U. S. ENGINEER OFFICE, Second New York District, Room 615, Army Building, 39 Whitehall Street, New York, N. Y. Sealed bids will be received until 12:00 Noon E. D. S. T., July 23, 1937 and then publicly opened for furnishing all labor and materials and performing all work for the *construction of a steel sheet pile bulkhead* about 500 feet long and a steel sheet pile groin about 300 feet long north of the existing steel bulkhead and groin at Manasquan River, N. J. (309)

U. S. ENGINEER OFFICE, 13TH FLOOR CUSTOMHOUSE, Boston, Mass.—Sealed bids will be received here until 12 Noon, E. D. S. T. July 21, 1937, and then opened, for *dredging* approximately 595,700 cu. yds., scow measurement, of material in Hog Island Channel, Buzzards Bay, Mass. Further information on application. (322)

SEALED PROPOSALS will be opened by the Supt. of Lighthouses, Key West, Fla., 2 p. m., July 19, 1937, for *docking, cleaning, painting and repairing Lighthouse tender Ivy.* Information upon application. (325)

OFFICIAL PROPOSALS

Bids: July 19. (328)

Sewage Pumping and Disposal Plant

Notice is hereby given that the City of Healdsburg will receive sealed bids up to 5 o'clock P. M. on the 19th day of July, 1937, and thereafter opened for the furnishing of the materials, equipment and labor required for the following work, according to the plans and specifications adopted by the City Council of the City of Healdsburg, Sonoma County, California, at a regular adjurned meeting on the 14th day of June, 1937.

To wit:

Construct sewage pumping and disposal plant and appurtenant works for the City of Healdsburg.

Bids must be made upon forms which may be obtained at the office of the City Clerk of the City of Healdsburg together with copies of the plans and specifications, for which a deposit of five dollars ($5.00) will be required. Upon return of the plans and specifications in good order three dollars ($3.00) shall be refunded by the City.

The City of Healdsburg, through its City Council, reserves the right to reject any or all bids, waive defects or to accept any bid.

(Signed) D. A. BANE,
City Clerk of the City of Healdsburg, Sonoma County, California.

Official Publication in the Sotoyome Scimitar, Healdsburg, Calif. First publication June 17, 1937.

Bids: July 12. (316)

Grade Crossing Elimination

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

GRADE GROSSING ELIMINATION—
MANTUA BOULEVARD

Reconstruction of a bridge carrying Mantua Boulevard across the tracks of the Pennsylvania-Reading Seashore Lines near Sewell Station in Mantua Township, Gloucester County. The principal items of construction are:

Estimated:
927 cu. yds. roadway excavation
24,278 cu. yds. borrow excavation
4,870 sq. yds. surface treated gravel pavement
1,899 cu. yds. foundation excavation
2,013 cu. yds. concrete
168,711 lbs. reinforcement steel
157,154 lbs. structural steel
5,296 sq. ft. cement mortar protection

Bids for the above will be received at the office of the State Highway Department, State House Annex, Trenton, N. J., on Monday, July 12, 1937, at eleven o'clock, Eastern Standard Time, (12:00 Noon, Daylight Saving Time), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed work is a "United States Works Program Grade Crossing Project" under the provisions of the Emergency Relief Appropriation Act of 1935, and is to be performed in accordance with the Special Provisions and Requirements of the United States Department of Agriculture, Bureau of Public Roads, as outlined in the Supplementary Specifications to be made a part of the contract and specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 1601 Mickle Street, Camden, N. J., preference in employment to be given, when they are qualified to those obtained from the public relief rolls. The attention of bidders is directed to the Special provisions covering subletting or assigning the contract and to the use of Domestic Materials. The minimum wage paid to all unskilled labor employed on this contract shall be $.50 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $.65 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.20 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made on the standard proposal forms in the manner designated by the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: E. DONALD STERNER,
State Highway Commissioner.

Bids: July 9. (327)

Westchester County Trunk Sewer

Sealed proposals for the watertight construction and completion in 90 calendar days of Section L of the Blind Brook Project, comprising about 900 linear feet of 24 inch cast iron pipe sewer, complete with all appurtenances and attendant work, located in the Village of Rye, New York, will be received by the Westchester County Sanitary Sewer Commission at room 808, County Office Building, White Plains, N. Y., until 2 P. M., on Friday, July 9, 1937, Daylight Saving Time, at which time they will be publicly opened and read aloud.

Plans and specifications, Invitations to Contractors, forms for Contractor's Bid, Affidavit, Contract and Bond may, after June 25, 1937, be examined at the Commission's office and copies may be obtained upon the deposit of $20 each. The amount of the Deposit will be refunded upon the return of the plans and documents in good condition within 30 days after the opening of bids.

The Commission reserves the right to waive any informalities in, or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in an amount not less than 5% of the total of the bid, in the form and subject to the conditions provided in the Invitation to Contractors.

The successful bidder will be required to furnish a performance bond in such form and having as surety thereon such surety company or companies as are approved by the Commission and the State Director in the amount of not less than 100 per cent of the total amount of the accepted bid.

This contract is to be financed in part by a grant by the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under this contract, as well as to other provisions set forth in the Invitation to Contractors.

The estimated cost of the contract is $12,000.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof, but may withdraw it at any time prior to the scheduled closing time for the receipt of bids or authorized postponement thereof.

WESTCHESTER COUNTY SANITARY SEWER COMMISSION
W. W. YOUNG, Chief Engineer
148-166 Martine Avenue, White Plains, New York. Phone: W.P. 1300
Blind Brook Section L.

OFFICIAL PROPOSALS

Bids: (322)

Electric Transmission Lines

Surprise Valley Electrification Corp., of Alturas, California, will release for bid approximately 350 miles of electric transmission and distribution lines about July 1st.

Plans and specifications are obtainable at the office of Allan Sickler, Consulting Engineer, Room 11, Belli Building, Alturas, California. Deposit $25.00, $20.00 returnable.

Engineering News-Record

prints more than twice as many announcements advertising contracts to be let as appear in any other one publication.

This wide use of *Engineering News-Record's* Official Proposal Columns and the rapidly growing recognition of this paper's value as a proposal advertising medium is due to RESULTS—keen competition, lower bids, better work—and savings.

For 60 years contractors, manufacturers, and dealers everywhere have consulted the Official Proposal Columns of *Engineering News-Record* and its predecessors for opportunities. Today many of those interested in bidding on contracts for work, material, and supplies depend entirely upon the advertisements that appear in this dominant paper and would be unlikely to see those printed elsewhere.

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U. S. Government

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 5, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 6, 1937, for *construction of the U. S. P. O. at Rockwood, Tenn.* Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (292)

SEALED BIDS, INDORSED "Bids for aviation field and facilities, Specification No. 8433," will be received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., until 11 A. M., June 28, 1937, and then and there publicly opened, for *aviation field and facilities, at St. Thomas, Virgin Islands of U. S.* The work includes paving, a boat house, an extension to a hangar, and an extension to a barracks, improvement of power plant, water reservoirs, surfacing, and drainage. The work involves wood piling; concrete construction; steel, iron, and bronze work; steel windows; metal and metal-covered doors; corrugated metal roofing and siding; steel-metal work; carpentry, joinery and timber work; screens; glazing; hardware; plumbing systems; electric work; oil surfacing of runways, drainage lines and painting. Specification No. 8433 and accompanying drawings may be obtained on application to the Bureau. Deposit of a check or postal money order for $30, payable to the Chief of the Bureau of Yards and Docks, is required as security for the safe return of the drawings and specification. NORMAN M. SMITH, Chief of Bureau, 14 May 1937. (289)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Sacramento, Calif. Sealed proposals will be received at this office until 2:00 o'clock P. M., Pacific Standard Time, July 13, 1937, and then opened, for the construction and completion of the *Equipment Repair Building*, A. C. Operations Office Building and A. C. Engineering Office Building at the Sacramento Air Depot, Sacramento, Calif. Plans and specifications may be obtained at the above office upon deposit of $25.00. Certified check made payable to the Treasurer of the United States required as deposit. (298)

OFFICIAL PROPOSALS

Bids: July 8. (299)

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, ALBANY, N. Y., until one o'clock p. m., daylight saving time, on Thursday, July 8, 1937, for the construction and reconstruction of highways in the following counties:

County	Deposit required	Type	Miles
Construction			
St. Lawrence	$5,000.00	18' Foundation Course Double Surface Treat	5.42
Wayne	2,300.00	18' Gravel Bit. Treated	3.62
Reconstruction			
Broome	5,000.00	20' M.M.O. incl. 56' I-Beam 70' Girder; 53' I-Beam	0.60
Delaware	19,500.00	20' & Var. Concrete 8" incl. 65' Girder & 42' I-Beam	2.85
	3,000.00	20' 26' M.M.O. incl. 90' Girder	0.23
Onondaga	8,000.00	20' Bit. Mac. Mixed in Place	7.06
Schoharie	5,000.00	20' 24' Concrete 8-7-8 incl. 145' Truss	0.53
Washington	19,000.00	14' Slab-Brick Approach 20' Concrete 8-7-8	7.04
Westchester	3,000.00	30' 43' M.M.O	1.22
Yates	10,500.00	20' Bit. Mac. Mixed in Place	4.21

Maps, plans, specifications, and estimate of cost may be seen and proposal forms obtained at the office of the Division of Highways in Albany, N. Y., and at the office of the District Engineers in whose districts the roads are located, upon the payment of Five Dollars ($5.00) for plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. No refund will be made on plans, specifications, or proposal forms. Plans and proposals may also be seen at the office of the State Department of Public Works, State Office Building, Worth and Center Streets, New York City. The addresses of the District Engineers and Counties in each district will be furnished upon request.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions applying to projects financed with federal funds.

Proposal for each highway or contract must be submitted to a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the New York State Department of Public Works, Division of Highways, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Sub. 2, Sec. 38 of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Sec. 38 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten per centum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance to the Highway Law, the amount of the bidding check will be returned when fifteen per centum of the contract work has been completed.

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows: *In New York City:* Skilled Labor, eighty cents per hour; Intermediate Grade Labor, seventy cents per hour; Unskilled Labor, seventy cents per hour; in the *Counties of Nassau, Suffolk and Westchester:* Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, sixty-five cents per hour; in the *Counties of Dutchess, Ulster, Orange and Sullivan,* seventy-five cents per hour for Skilled Labor; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, fifty cents per hour with the exception of Orange County which rate is sixty cents per hour; and in all other counties other than above, Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, forty-five cents per hour, unless shown otherwise in the itemized proposal.

The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Sub-division d, of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

FRED'K STUART GREENE,
Supt. State Dept. Public Works.

OFFICIAL PROPOSALS

Bids: June 30 (301)

Railroad Facilities, Etc.

Dated June 15th, 1937.

Syracuse, New York.

Sealed bids for Railroad Facilities, and for Finished Grading, Walks, Paving and Fencing in connection with the Central New York Regional Market at Syracuse, New York, will be received by the Central New York Regional Market Authority at their office at Room 208 State Tower Building, Syracuse, New York, until 11:00 A. M., E. S. T., on Wednesday, June 30th, 1937, and then at said office publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Forms of Bid and Performance Bond, may be examined at said office, or at the office of Carl W. Clark, A.I.A., Cortland, New York, and copies thereof obtained upon payment of $5.00 for each set. Any bidder, upon returning such set promptly and in good condition will be refunded his payment, and any non-bidder on so returning such set will be refunded $2.00 Dollars.

The Central New York Regional Market Authority reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid, security in an amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information to Bidders.

The successful bidder will be required to furnish a performance bond in such form and having as surety thereon such surety company or companies as are approved by the public body and said State Director, in the amount of not less than 100% of the total amount of the accepted bid.

This contract is to be financed wholly or in part by a loan and/or grant by the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof, but may withdraw it at any time prior to the scheduled closing time for reception of bids.

The Architect's estimate of the cost of each Section of the work to be done is as follows:

III	Railroad Facilities	$ 80,000
V	Finished Grading, Walks, Paving and Fencing	46,500
	Total	$126,500

Central New York Regional Market Authority.

HAROLD L. CREAL, Secretary.
Dated June 15th, 1937.

D. C. Government

COMMISSIONERS, D. C., Washington, June 23, 1937. Sealed proposals will be received at Room 509, District Building, until 2:00 P. M., E. S. T., July 13, 1937 and then publicly opened, for the *Landscape Development* for the Adult Sanatorium and Nurses' Home at site of District of Columbia Tuberculosis Sanatoria, near Glenn Dale, Prince Georges County, Maryland. A more complete description of the work and full information for bidders is given in the drawings, specifications, and in other contract papers, which may be obtained at Room 427, District Building, upon deposit of a CERTIFIED CHECK payable to the COLLECTOR OF TAXES, D. C., in the sum of TEN DOLLARS ($10.00) to insure return in good condition. Not more than three (3) complete sets of drawings and specifications and contract papers will be furnished to any one general contractor. No proposal will be accepted unless accompanied by a guaranty of not less than five percent (5%) of the amount of the bid in the form of a certified check made payable to the Collector of Taxes, D. C., U. S. bonds, or the bond of an approved surety company. Security for the faithful performance of the work shall be in the form of a surety bond in a penal sum equal to the estimated total contract price. A labor bond in an amount equal to the largest estimated aggregate payroll for any one month is required. Public liability insurance in the sum of $5,000 and $10,000 is also required. The work called for by this proposal is to be performed in accordance with an agreement dated December 19, 1934, between the Commissioners of the District of Columbia and the Federal Emergency Administrator of Public Works, as amended; and is subject to the construction regulations and labor provisions of Bulletin No. 2 of the Federal Emergency Administration of Public Works dealing with Non-Federal projects, as revised. The Director of Reemployment for the District of Columbia is C. E. Lamson, 480 Indiana Avenue, N.W. The Commissioners reserve the right to reject any or all proposals and to waive informalities as they deem best for the interest of the District of Columbia. Final award of contract is subject to approval of the Federal Emergency Administrator of Public Works. No bidder may withdraw his proposal for a period of thirty (30) days after the date for the opening thereof. Attention is called to the fact that not less than the minimum wage rates prescribed by the Federal Emergency Administration of Public Works must be paid on this project. Melvin C. Hazen, George E. Allen, Dan I. Sultan, Commissioners, D. C. (310)

COMMISSIONERS, D. C., Washington, June 22, 1937. Sealed proposals will be received at Room 509, District Building, until 2:00 P. M., e.s.t., July 6, 1937 and then publicly opened, for *Landscape Development* adjacent to the Children's Sanatorium at site of District of Columbia Tuberculosis Sanatoria, near Glenn Dale, Prince Georges County, Maryland. A more complete description of the work and full information for bidders is given in the drawings, specifications, and in other contract papers, which may be obtained at Room 427, District Building upon deposit of a CERTIFIED CHECK payable to the COLLECTOR OF TAXES, D. C., in the sum of TEN DOLLARS ($10.00) to insure return in good condition. Not more than three (3) complete sets of drawings and specifications and contract papers will be furnished to any one general contractor. No proposal will be accepted unless accompanied by a guaranty of not less than five percent (5%) of the amount of the bid in the form of a certified check made payable to the Collector of Taxes, D. C., U. S. bonds, or the bond of an approved surety company. Security for the faithful performance of the work shall be in the form of a surety bond in a penal sum equal to the estimated total contract price. A labor bond in an amount equal to the largest estimated aggregate payroll for any one month is required. Public liability insurance in the sum of $5,000 and $10,000 is also required. The work called for by this proposal is to be performed in accordance with an agreement dated December 19, 1934, btween the Commissioners of the District of Columbia and the Federal Emergency Administrator of Public Works, as amended; and is subject to the construction regulations and labor provisions of Bulletin No. 2 of the Federal Emergency Administration of Public Works dealing with Non-Federal projects, as revised. The Director of Reemployment for the District of Columbia is C. E. Lamson, 480 Indiana Avenue, N.W. The Commissioners reserve the right to reject any or all proposals and to waive informalities as they deem best for the interest of the District of Columbia. Final award of contract is subject to approval of the Federal Emergency Administrator of Public Works. No bidder may withdraw his proposal for a period of thirty (30) days after the date for the opening thereof. Attention is called to the fact that not less than the minimum wage rates prescribed by the Federal Emergency Administration of Public Works must be paid on this project. Melvin C. Hazen, George E. Allen, Dan I. Sultan, Commissioners, D. C. (311)

U. S. Government

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 16, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 20, 1937, for *construction of the U. S. P. O. at Elkin, N. C.* Upon application, one set of drawings and specifications will be supplied free to each General Contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any Sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (315)

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 15, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 23, 1937, for *construction of the U. S. P. O. at Tunkhannock, Pa.* Upon application, one set of drawings and specifications will be supplied free to each General Contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to Contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any Sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (313)

UNITED STATES ENGINEER OFFICE, First District, New York City, Room 710, 39 Whitehall Street, New York, N. Y. SEALED BIDS will be received until 12 M. (Daylight Saving Time) July 9, 1937, and then publicly opened, for furnishing all plant, labor and materials and, performing all work for *dredging* approximately 165,800 cu. yds., place measurement, of material in Coney Island Creek, New York, N. Y. (296)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Sacramento, Calif. Sealed proposals will be received at this office until 2:00 o'clock P. M., Pacific Standard Time, July 16, 1937, and then opened, for the construction and completion of the *Sewage Disposal Plant* at the Sacramento Air Depot, Sacramento, California. Plans and specifications may be obtained at the above office upon deposit of $10.00. Certified check made payable to the Treasurer of the United States required as deposit. (297)

U. S. Government

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 15, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Aug. 10, 1937, for *construction of the U. S. P. O. at Toppenish, Wash.* Upon application, one set of drawings and specifications will be supplied free to each General Contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to Contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any Sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (314)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 10 A. M., Central Standard Time, July 7, 1937, and then publicly opened, for designing, furnishing, fabricating, shop testing, and delivering (20) 161-KV, *Outdoor Disconnecting Switches*, and twelve (12) 115-KV, *Outdoor Disconnecting Switches* for Pickwick Landing Power Plant. Bidding documents, for which there is no charge, available June 18, 1937, at above office. C. H. Garity, Director of Purchases. (306)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 2 P. M., Central Standard Time, July 6, 1937, and then publicly opened, for designing, furnishing and delivering *Conveying Equipment* for Construction Plant at Hiwassee Dam, including Conveying Machinery, with Motors, Gear Reducers, Chain Drives, and Conveyor Belting. Bidding documents, for which there is no charge, available June 17, 1937, at above office. C. H. Garity, Director of Purchases. (307)

SEALED BIDS, INDORSED "Bids for library addition, Specification No. 8510," will be received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., until 11 a. m., 30 June, 1937, and then and there publicly opened, for *library addition* at the Naval War College, Newport, R. I., involving earthwork, concrete construction, brick and hollow tile work, granite, pre-cast concrete roof slabs, steel and iron work, steel book stacks, metal and metal-covered doors, sheet metal work, slate roofing, steel windows, lathing and plastering, terrazzo, carpentry and millwork, screens and storm sash, acoustical treatment, glazing, hardware, elevator, heating, ventilating, electrical work and painting. Specification 8510 and accompanying drawings may be obtained on application to the Bureau or to the Commandant, Naval Training Station, Newport, R. I. Deposit of a check or postal money order for $50, payable to the Chief of the Bureau of Yards and Docks, is required as security for the safe return of the drawings and specification. NORMAN M. SMITH, Chief of Bureau, 5 June, 1937. (312)

Make Plans Accessible to Distant Bidders

Plans and specifications for inspection by distant bidders may be filed at any of *Engineering News-Record* offices (without charge). Or a sufficient supply may be deposited at such of our offices as seem desirable, subject to your usual requirements in the matter of deposits, etc. (We assume full responsibility for return of plans or deposits). Therefore, Contractors in all parts of the country can bid with equal convenience on contracts advertised in *Engineering News-Record*.

OFFICIAL PROPOSALS

Bids: July 21. (318)

State Road Work

DOVER, DELAWARE

Sealed proposals will be received by the State Highway Department, at its office, Dover, Del., until 2:00 o'clock p. m., Eastern Standard Time, July 21, 1937, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT A-2
Gasoline 1937-38

500,000 Gal. Regular Grade
200,000 Gal. Premium Grade

CONTRACT B-2
Oil and Grease 1937-38

16,000 Gal. Motor Oil
300 Lbs. Water Pump Grease
600 Lbs. Wheel Bearing Grease
600 Lbs. Universal Grease
1,000 Lbs. Chassis Grease

Performance of contract shall be commenced within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for State Highway Contract No. ....."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained after July 12, 1937, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

STATE HIGHWAY DEPARTMENT,
Dover, Delaware

Bids: July 2 (303)

General Construction

BOARD OF EDUCATION
CENTRAL SCHOOL DISTRICT No. 1 OF THE TOWNS OF MEXICO, PARISH, PALERMO, HASTINGS, NEW HAVEN, VOLNEY, AND RICHLAND, OSWEGO COUNTY, NEW YORK

Sealed separate bids for General Construction, Heating and Ventilating, Plumbing Work, and Electrical Work for the construction of a new school building to be erected at Palermo, Oswego County, New York, will be received by said Board of Education, at its office in the village of Mexico, Oswego County, New York, until 2:00 P.M., E.S.T., on the 2nd day of July, 1937, and then at said office, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Form of Bid Bond, Performance Bond, plans and specifications, and other contract documents will be available for examination by prospective bidders and other interested parties, without charge, at the office of the Board of Education or at the office of Harold O. Fullerton, Architect, 152 Washington Ave., Albany, N. Y., or copies of all documents will be obtainable at the office of Harold O. Fullerton, Architect, 152 Washington Ave., Albany, N. Y., upon receipt of a certified check payable to H. O. Fullerton, or cash, in the amount of ten ($10) dollars for each set, which amount will be returned to all depositors upon returning such sets in good condition, within thirty (30) days after the opening of bids.

The Board of Education reserves the right to waive any informalities in, or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security made payable to said Board of Education in an amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information for Bidders.

This contract is to be financed wholly or in part by the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirements as to the conditions of employment to be observed and minimum wage rates to be paid under the contract.

The successful bidder will be required to furnish a performance bond in such form and having as surety thereon, such surety company or companies as are approved by the Board of Education and the State Director in the amount of not less than 100% of the total amount of the accepted bid.

The facilities of the bidders for the execution of work of this description, experience in work of similar type, financial standing, quality of work on other buildings erected, proper completion within contract time of other contracts, any one or all of those may be considered in determining the award of the contract.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof but he may withdraw it at any time prior to the scheduled closing time for the receipt of bids, or authorized postponement thereof.

The following are the estimates for these contracts:

Contract No. 5:
GENERAL CONSTRUCTION $23,000
Contract No. 6:
HEATING AND VENTILATING 3,000
Contract No. 7:
PLUMBING WORK 2,800
Contract No. 8:
ELECTRICAL WORK 1,200

R. AUSTIN BACKUS,
President, Board of Education.

June 17, 1937.
June 24, 1937.

Bids: July 21. (314)

Anchorages of the Bronx-Whitestone Bridge

TRIBOROUGH BRIDGE AUTHORITY

Sealed bids will be received by the Triborough Bridge Authority at its office, Administration Building, Randall's Island, Manhattan, New York City, until 11:00 o'clock, Daylight Saving Time, on the morning of Wednesday, July 21, 1937, for the Anchorages of the Bronx-Whitestone Bridge connecting the Boroughs of Queens and Bronx, Contract No. WB-4.

A more complete description of the work and full information for bidders is given on the drawings and in other contract papers which may be seen at the office of the Assistant Chief Engineer, Triborough Bridge Authority, Room 1537, 111 Eighth Avenue, Manhattan, New York City, N. Y.

Each bid must be accompanied by a deposit in the amount of Forty Five Thousand Dollars ($45,000.00).

Blank forms for proposals, information for bidders, contract, bond and specifications may be obtained at the office of the Assistant Chief Engineer, Room 1537, 111 Eighth Avenue, Manhattan, New York City, New York. Arrangements will be made whereby prospective bidders desiring sets of blueprints of the contract drawings for their own use may secure same, the cost thereof ($1.80 per set) to be paid by them.

Dated: June 24, 1937.

PAUL LOESER,
Director.

Bids: July 12 (304)

Dredging

STATE OF NEW JERSEY
BOARD OF COMMERCE AND NAVIGATION
STATE HOUSE
TRENTON, NEW JERSEY

Sealed proposals for redredging the channel of the Island Waterway in 8 Sections located between Ocean City and City of Cape May, all in County of Cape May, State of New Jersey, will be received at the Office of the Board of Commerce and Navigation, State House, Trenton, New Jersey, on Monday, July 12th, 1937, at 12:00 o'clock noon Eastern Daylight Saving Time (11:00 A. M. Eastern Standard Time), and then publicly opened.

The total estimated volume of dredging is 324,000 cubic yards.

The right is reserved to reject any or all bids. Plans and specifications may be viewed in the office of the Board of Commerce and Navigation at No. 1060 Broad Street, Newark, New Jersey, or will be furnished upon receipt of a certified check or Post Office Money Order, drawn to the order of the Board of Commerce and Navigation of New Jersey, in the amount of Twenty ($20.00) Dollars, which will be refunded upon return of the plans and specifications in good order.

VICTOR GELINEAU,
Director.

Advertisements for bids published in Engineering News-Record secure maximum competition—the most bidding by the best bidders.

U. S. Government

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 3, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 9, 1937, for furnishing all labor and materials and performing all work for the *construction of the U. S. P. O. at Hettinger, N. Dak.* Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal, the above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (320)

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 12, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 16, 1937, for *construction of the U. S. P. O. at Rusk, Texas.* Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the government, will be furnished, in the discretion of the assistant director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (305)

PROCUREMENT DIVISION, Public Buildings Branch, Washington, D. C., June 11, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., July 14, 1937, for *construction of the U. S. P. O. at Clyde, Ohio.* Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the government, will be furnished, in the discretion of the assistant director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch. (308)

U. S. ENGINEER OFFICE, 2nd New York District, Room 615, Army Building, 39 Whitehall Street, New York, N. Y. Sealed bids will be received until 12:00 Noon, E. D. S. T., June 29, 1937, and then publicly opened for furnishing all labor and materials and performing all work for *dredging* approximately 90,000 cubic yards of material from South Channel Raritan River, N. Y. (247)

OFFICIAL PROPOSALS

Bids: July 6. (300)

Nepaug Dam

CONTRACT 28

SEALED PROPOSALS addressed to the Board of Contract and Supply of The Metropolitan District and endorsed "PROPOSAL FOR RESURFACING NEPAUG DAM, IN THE TOWN OF NEW HARTFORD, CONNECTICUT" will be received by the Board of Contract and Supply of The Metropolitan District at the Executive Office in the Municipal Building, 550 Main Street, Hartford, Connecticut, until 1:15 P.M., Eastern Standard Time, Tuesday, July 6, 1937, at which time and place they will be publicly opened and read.

After the bids are opened and read they will be taken under advisement and the award of the contract, if awarded, will be made as soon thereafter as practicable.

The work will consist of resurfacing the spillway section by use of reinforced Gunite, approximately 25,000 square feet. The contract may also include similar work on the non-overflow sections; downstream belt course and parapet wall, approximately 5,000 square feet. About three and one-half months will be allowed for the entire work.

Plans and specifications may be obtained on and after June 17, 1937, at the Office of the Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 1026 Main Street, Hartford, Connecticut, on deposit of five dollars ($5), in cash or certified or cashier's check, made payable to The Water Bureau of The Metropolitan District, which amount will be refunded if both the plans and specifications are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified or cashier's check for an amount equal to ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract. Excerpt from the by-laws of the District, Journal of The Metropolitan District 1934, minutes of the meeting of the District April 2, 1934, page 89. "All such bid checks, except those of the successful bidder and the next lowest three bidders, may be returned to the respective bidders as soon as the contract shall have been awarded. All checks not so returned shall be retained until the successful bidder shall have qualified and executed a contract in writing covering the work to be done or materials to be furnished."

Bids will be considered only from contractors who have had previous experience in Gunite work, who have satisfactory and sufficient equipment to carry on the work properly, and who can submit satisfactory statements from previous employers.

The right is reserved to accept any bid, whether or not the lowest, or to reject any or all bids as the interest of the District may appear to require.

BOARD OF CONTRACT AND SUPPLY.
By: Richard Dillon, Clerk.
Hartford, Connecticut,
June 10, 1937.

Bids: July 14. (317)

State Road Work

Dover, Delaware.

Sealed proposals will be received by the State Highway Department, at its office, Dover, Del., until 2:00 o'clock p. m., Eastern Standard Time, July 14, 1937, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 155A
SILVER LAKE BRIDGE APPROACHES
0.514 Mi.

1800 Cu. Yds. Unclassified Excavation
1400 Cu. Yds. Cement Conc. Pavement (Job Mix)
750 Lin. Ft. ¾ in. Slip Dowel Trans. Exp. Joints (Cork)
1500 Lin. Ft. Transverse Contraction Joints
5 Cu. Yds. Cement Concrete Masonry
200 Lbs. Reinforcing Steel
850 Lin. Ft. 12 in. T & G R. C. Pipe
270 Lin. Ft. 15 in. R. C. Pipe
2500 Lin. Ft. Integral Conc. Curb & Gutter
6500 Sq. Ft. Cement Concrete Sidewalk
15 Catch Basins and Drop Inlets
7500 Lbs. Castings
1700 Lin. Ft. Wire Rope Guard Fence
10 End Post Attachments
400 Sq. Yds. Removal of Present Conc. Pavement
1560 Sq. Ft. Brick Sidewalk
100 Sq. Yds. Wire Mesh Reinforcement

CONTRACT 523
4 Ft. Conc. Widening
Bridgeville-Md. Line via Atlanta 6.674 Mi.

6800 Cu. Yds. Unclassified Excavation
4200 Cu. Yds. Cement Conc. Pavement (Job Mix)
2750 Lin. Ft. ¾ in. Slip Dowel Trans. Exp. Joints (Cork)
40 Cu. Yds. Cement Concrete Masonry
1600 Lbs. Reinforcing Steel
1250 Lin. Ft. 12 in. T & G R. C. Pipe
30 Lin. Ft. 15 in. R. C. Pipe
30 Lin. Ft. 18 in. R. C Pipe
10 Lin. Ft. 24 in. R. C. Pipe
10 Lin. Ft. 36 in. R. C Pipe
500 Lin. Ft. Integral Conc. Curb and Gutter
800 Sq. Ft. Cement Conc. Sidewalk
5 Catch Basins and Drop Inlets
2500 Lbs. Castings
750 Sq. Yds. Patching Present Conc. Pavement
900 Lin. Ft. Slip Dowel Expansion Joints for Patches

CONTRACT 530
ROADSIDE BEAUTIFICATION
Md. Line to Glasgow 2.588 Mi.

354 Trees
1400 Plants
2600 Sq. Yds. Top Soiling

CONTRACT 544
BIT. SURFACING COURSE
Augustine Cut-Off—New Bridge Rd. 1.23 Mi.

150 Tons Waterbound Macadam Surface Course
1850 Tons Bituminous Concrete Surface Course

CONTRACT U-1

1 Timber Ferry Boat
F. O. B. Woodland, Del.

These contracts will come under the provisions of the regular Federal Highway Act of 1935 and Emergency Relief Appropriation Act of 1935. The employment agency for contracts in New Castle County shall be the United States Employment Service at 309 Walnut St., Wilmington, Delaware; in Kent County, the United States Employment Service, Dover, Delaware; and in Sussex County the United States Employment Service, Georgetown, Delaware. The minimum wages paid will be: for New Castle County, skilled labor 80c per hour, intermediate grade labor 50c per hour, and unskilled labor 35c per hour; for Kent and Sussex Counties, skilled labor 70c per hour, intermediate grade labor 40c per hour, and unskilled labor 25c per hour.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Attention is also directed to the special provisions covering sub-letting or assigning the contract, and to the use of domestic materials when financed wholly or in part from Works Program funds.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for 90 per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained after July 6, 1937, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

STATE HIGHWAY DEPARTMENT
Dover, Delaware

POSITIONS WANTED

ENGINEER, registered New York. A[illegible] experienced designer, executive. Steel [illegible] tures, mechanical handling, industrial [illegible] equipment, maintenance. PW-887, Engineering News-Record, 330 West 42nd Street, New York City.

CONTRACTORS Manager-Job superintendent, 46, engineer, estimator, extensive experience Industrial Plants, buildings, dams, power plants, pipe lines, electrical systems, water systems, bridges, general construction. PW-918, Engineering News-Record, 520 No. Michigan Ave., Chicago, Ill.

IF YOU HAVE a new job, or real problems in your construction field as to your progress and cost and are desirous of a superintendent of general construction experience who produces and knows no alibis and asks no compensation without results, address PW-920, Engineering News-Record, 330 West 42nd Street, New York City.

RODMAN—college engineering student desires position until September 10th. PW-925 Engineering News-Record, 330 West 42nd Street, New York City.

STRUCTURAL DRAFTSMAN—would like detailing to do at home near Boston, Mass. Experience includes hip and valley framing. PW-928, Engineering News-Record, 330 West 42nd Street, New York City.

CIVIL ENGINEERING—student, Brooklyn (N. Y.) Polytechnic 40 would like summer employment in Metropolitan New York engineer's or contractor's office. PW-930, Engineering News-Record, 330 West 42nd Street, New York City.

CONSTRUCTION SUPERINTENDENT or Manager. Engineer. Thirteen years' full charge construction of institutional, industrial, residential buildings. Realty development. Thoroughly dependable. PW-934 Engineering News-Record, 330 West 42nd Street, New York City.

GENERAL OR BUILDING Superintendent. 15 years mine engineer, surveyor, estimator, office engineer, project superintendent, building and general contractor. PW-935, Engineering News-Record, 330 West 42nd Street, New York City.

BUILDING CONSTRUCTION SUPERINTENDENT of many years' experience in full charge of practically all kinds of structures, both private and public contracts; completed with satisfaction to owners and at a profit to employers also first class Estimator. PW-945, Engineering News-Record, 330 West 42nd Street, New York City.

CONTRACTOR'S ENGINEER graduate, 20 years' wide experience building and general construction, including estimating, purchasing negotiating, seeks connection. Present salary $3200. PW-946, Engineering News-Record, 330 West 42nd Street, New York City.

GENERAL FOREMAN OR FOREMAN—experienced excavating, drag line, shovel, sheeting foundations, steel concrete placing, water works, bridge, plants. Go anywhere. PW-949, Engineering News-Record, 330 West 42nd St., New York City.

GRADUATE CIVIL ENGINEER, registered, age 38, 10 years' highway and miscellaneous surveys, construction and office experience. Will go anywhere. Position with future preferred. Box 221, Hinkley, Minn.

(Continued on page 73)

SALARIED POSITIONS

$2,500 to $25,000

This thoroughly organized advertising service of 27 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details.

R. W. BIXBY, INC.
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A Sales Promotion Opportunity

is open to a relatively young man who is selling (or has sold) contractors equipment and knows the field and the market well enough to direct and coordinate sales promotion activities on an equipment item produced by a well-known manufacturer. Applications will be considered in confidence but must give the detail necessary to justify consideration.

W-1105 c/o Engineering News-Record, 520 North Michigan Ave., Chicago, Ill.

POSITIONS WANTED

(Continued from opposite page)

ENGINEER 18 years' experience in designing and detailing various structures of reinforced concrete and structural steel. Harry A. Acy, 1773 Galbert Avenue, Louisville, Ky.

GRADUATE CIVIL ENGINEER—27, single, 4½ years of responsible engineering experience, surveying, designing, drafting, inspection, and construction work. Desire position with progressive contracting or engineering firm. PW-954, Engineering News-Record, 520 No. Michigan Ave., Chicago, Ill.

DO YOU NEED A MAN in your organization with these qualifications?—Graduate Civil Engineer, eleven years' sales promotion experience in the construction industry, three years design and construction. Accustomed to dealing with busy executives and to dependence on own initiative. Age 35, married, employed Middle West at present but familiar with all states West of Chicago. PW-955, Engineering News-Record, 520 No. Michigan Ave., Chicago, Ill.

JOB OR CARPENTER FOREMAN—18 years' experience industrial plant, dams, power houses, steam water, diesel and ice plant construction, also mechanical installations. Location and Salary open, available July 15. PW-957, Engineering News-Record, 520 No. Michigan Ave., Chicago, Ill.

CONSTRUCTION SUPERINTENDENT—with years of experience (harbors, breakwaters, seawalls, piers, bridges, docks, water-intakes, submarine operations, dipper and hydraulic dredging, deep foundations, and building construction). The applicant promises results regardless of what your job problem may be. No compensation asked without producing results. PW-959, Engineering News-Record, 330 West 42nd Street, New York City.

ESTIMATOR—Engineer structural steel, ornamental iron. Thoroughly experienced iron shop practice, industrial work. Salary and commission. PW-960, Engineering News-Record, 330 West 42nd Street, New York City.

ENGINEER EXECUTIVE—Wide experience on mechanical, electrical and civil engineering projects, is available. Organization and administration—private, public and public utility work. Design, construction and maintenance. PW-962, Engineering News-Record, 330 West 42nd Street, New York City.

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Structural Engineering

A practical course, given by mail only. Twenty-seventh year. For adult Engineers. Also, a Preparatory Course for men not previously graduated (C.E.) from a technical college. The Structural Engineering course prepares for successfully passing Structural Designing portion of State Board Examinations for P.E. license. Address: Wilson Engineering Corporation. College House Offices. Harvard Square, Cambridge, Mass.

PROFESSIONAL ENGINEER LICENSE—Drafting, designing, architectural, Airplane, Mechanical, Electrical, Ship, Piping, Structural, Topographical, Survey, Building Estimating, Mathematics, Preparation Civil Service Exams., Asst. Engineer Designer, Mechanical Engineer, Engineering Inspector, Days, Evenings, Mondell 112 W. 42 Street. Wis. 7-2087.

BUSINESS OPPORTUNITY

CONSTRUCTION SUPERINTENDENT — will invest money and services. Applicant is backed by years of field experience and is a producer. Give sufficient details to warrant investigation. All correspondence held strictly confidential. BO-958, Engineering News-Record, 330 West 42nd Street, New York City.

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OFFERED—WANTED
Selling Agencies—Sales Executives
Salesmen—Additional Lines

OPPORTUNITY WANTED

DAILY REPORT on new business available in 48 states. Construction projects, industrial and commercial building, public works, all types of civil engineering construction reported in proposed, bids asked, and contracts awarded stages. Mailed daily for first class or air mail, $10 per month, $1 additional for air mail. Speeds up sales follow up. Write for sample. McGRAW-HILL CONSTRUCTION DAILY, 300 W. 42nd St., New York, N. Y.

OPPORTUNITY OFFERED

Valve concern desires representation in the Chicago area covering water and sewerage. RW-956, Engineering News-Record, 330 West 42nd Street, New York City.

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Transits and Levels
New and used, sale, rent, repair, prompt service. O. Griner, 920 Oak St., Kansas City, Mo.

SALESMAN experienced in selling to industries and other large properties. We feature a flooring material practically wearproof. Carloads being sold America's largest concerns for surfacing old floors of all kinds. Unlimited demand. Get particulars on this and complete line of maintenance materials. High commissions. Bonus for beginners. Protected territories.
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WANTED—SALES REPRESENTATIVE
PREFERABLY MINING ENGINEER ABOUT 35 YEARS OF AGE. EXPERIENCED IN USE AND TREATMENT OF DETACHABLE BITS.
RW-952, Engineering News-Record
330 W. 42d St., New York City

FOR SALE
LARGE UTILITIES PLANT IN NEW YORK STATE
2 Stage **Sturtevant blowers** size No. 8 Turbine driven
1—Single Stage **Sturtevant blower** size No. 6½ Steam engine driven
1—**Wickes Waste Heat Boiler**
10—**Miscellaneous Pumps** for oil, tar, hydraulic system, etc.
2—**Lowe D. S. set** U.G.I. capacity 1,178,000
1—**Isabel Porter C.I. Condenser** 594 tubes
1—**W.G. Scrubber Isabel Porter Co.** 7'x23'3"
All above in excellent condition.
FS 961, Engineering News-Record
330 W. 42nd St., New York City

FOR RENT
1¼ Yard P&H Dragline
Good condition.
Address Box 488,
BEARDSTOWN, ILL.

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Long Island Structural Steel Co.
400-410 Tiffany St., Bronx, N. Y.
We Buy and Sell **Structural Steel**
ANGLES BEAMS CHANNELS—PLATES
NEW AND USED

WANTED
Rollers: 5 and 10 ton, 3 wheel, also 3, 5 and 8 ton tandem.
Crane: B-2 Erie steam.
Gasoline shovel: 1 yd. or 1¼ yd.
Graders: Power and Leaning Wheel 10 or 12 ft. blades.
J. T. WALSH
Brisbane Bldg., Buffalo, N. Y.

WANTED
Shovel Attachments for No. 4 or 105 Northwest and 301 Koehring, one yard Northwest Drag Bucket, Duplex Crushing Plant, Power Unit, Portable Asphalt Plant, distributor, Elevating Grader, R. D. 7 and Blade.
POOLE CONSTRUCTION CO., Ltd.
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WANTED — USED
Two **Speed Cranes**—One half or three quarter yard **Gas Shovel—Truck Cranes—Bulldozers**—100 ft. **Steel Masts**—Booms etc. **Conveyors, Large Gasoline Caterpillar Cranes or Shovels.**
Owners only.
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330 West 42d St., New York City.

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SALE—RENT REPAIRING

REBUILT REPAIR RENT REAL EXPERTS ALL MAKES

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CASH PAID FOR
Used Engineers' Transits
State Make and Specifications, size, condition. Gurley's Preferred (No Dealers)
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TRANSIT and LEVEL REPAIRING
Our shop fully equipped to handle repairs of all makes and kinds of instruments
Service unsurpassed—Low cost
Send for list of reconditioned instruments
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COMPLETE SAND PLANT

including

1—12" *Hetherington & Brenner manganese dredge* pump direct connected to G. E. 300 H. P. slip ring motor.

1—*National* 5 drum *dredge hoist.*
Also *priming pump, steel rope blocks and other dredge plant equipment.*

ABOVE USED LESS THAN 90 HOURS

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3—*Butler* 100 ton *steel bins.*

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L. B. SMITH, INC. CAMPHILL, PA. Suburb of Harrisburg
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AIR COMPRESSORS

1—1302 Cu.Ft. Ingersoll-Rand, PRE-2, 20 x 12½ x 14, 100# pressure, driven by General Electric Synchronous motor, Type TS Form A, 3 phase, 60 cycle 2200 volt, 257 RPM mounted direct on Compressor crankshaft.

1—2030 Cu.Ft. Compressor same specifications as above, size 24½ x 15½ x 18, driven by 450 HP Synchronous Motor.

Both machines are complete with intercoolers, after-coolers and switchboard equipment with all accessories.

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Steel Building Structures
with and without Crane Runways

40' x 51'	153' x 290'	89' x 730'
38' x 160'	60' x 300'	130' x 235'
53' x 84'	38' x 320'	110' x 400'
90' x 170'	60' x 180'	440' x 730'

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Railway Exchange CHICAGO, ILL.
"Anything so long as it contains Iron or Steel"

FOR SALE—Surplus Equipment

1—40 **Diesel Cletrac tractor,** slightly used, nearly new.
1—40 **International Diesel Tractor,** with Gar Wood Angledozer.
2—40 **International Diesel Tractors,** with Gar Wood Bulldozers.
1—**Warco** 12 foot **Grader** with 30 H.P. McCormack-Deering Tractor, gear operated, latest type, 12 foot blade, Octopus Drive, like new, used 60 days.
1—**Rome Grader,** 10 foot blade, good condition, cheap.
4—**Rebuilt Fordson Tractors,** steel wheels, all equipped with Bosch High Tension Magnetos. As good as new, bargain.
2—**Tom Huston Stump Pullers,** 45 Ton direct line pull, good condition, to be operated with Fordson Tractor.
1—**Lakewood Rooter Scarifier.**

KENDRICK LAND CLEARING CORP.
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25 Ton **American** 8 wheel **Loco. Crane,** 50' Boom. 170 lb. reflued **ASME Boiler,** New Aug. 1929. In best of condition.
25 Ton **McMyler Locom. Crane,** New 1928.
2—20 ton **Whitcomb** 4' 8½" ga. **Gaso. Locos.**
2—14 ton **Whitcomb** 30" ga. **Gaso. Locos.**
2—¾ yd. **Blaw Knox #611 Clamshells.**
¾ & 1 yd. **Northwest Cranes,** 40 & 50' Boom.
2 and 3 Drum 8½x10" **Lidgerwood Hoists.**
30 HP **Fairbanks Diesel Power Unit.** New 1935.
40 KW **Caterpillar Diesel Generator,** New 1937.
100, 150, 200, 240, 300 HP **F-M Diesel Engines.**
1200 ft. **Ingersoll Rand Belted Compressors.**
4000 ft. **Air Compressor.** Diesel available.
60 HP **Firebox Boiler.** Hartford insp. 150 lbs.
25—2 yd. **Koppel** extra heavy 24" ga. **V-dump.**
40 HP 685 rpm **Wagner** 3/60/220 v. **Motor.**

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LOCO CRANE
Type J 35 Ton McMyler
Locomotive Crane
ALLEGHENY EQUIPMENT CORP.
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2—Type 20 Conways—Now Operating—Perfect Condition.
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Buckeye 203 trench excavator, used 3 seasons, overhauled, cuts 32" to 42" wide, by 20' deep or more, will take 72" widening device. Sell or rent. **Orton ¾-yd. gas. cat. crane,** 40' boom, new but not latest model, never left factory, guaranteed. 40% price reduction.
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1—5000 g.p.m., 12 in. Allis-Chalmers motor driven Centrifugal Pump.

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86' long, 23' wide, 10'8" deep, 98 tons net. All steel construction, including pilot house. Fresh or salt water service. Completely rebuilt. Specifications and price mailed on request.

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1—Moore Speed crane #179, 65' boom, 1 yd. bucket.
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1—Industrial Brownhoist No. 1, #10057, 36' boom, ½ yd. bucket.
1—Byers Bearcat crane, model 26, ser. #30474, half circle swing, ½ yd. bucket.
1—Erie type B-2, ser. #3900 steam crane, 40' boom, 1 yd. bucket.

SPECIAL

1—Link-Belt K-55 Dragline ser. #1698 —70 ft. boom, 2 yd. bucket.

1—Practically new Link-Belt K-38 shovel, Ser. No. 1620, with 22' boom, 16' dipper stick and 1¼-yd. manganese dipper. Used less than 30 days.

LOADERS

2—Barber Greene models 42-A and 42-B.
1—Haiss model A.

PAVERS

6—27-E Foote pavers, ser. nos. 4243-4135 with 10% oversize drums; 3954-3923-3861-3730 with 5% oversize drums.
1—27-E Rex #G-9568 with 10% oversize drum.
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SEND FOR COMPLETE STOCK LIST

PUMPS

All sizes and types—force, centrifugal and steam.

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1—Osgood heavy duty ser. 2059, 1 yd. gas shovel.
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6½ YARD MINING or STRIPPING SHOVEL

Bucyrus 320-B 2200/4000 volt, 3 ph., 68 cycle, A.C.—250 volt D.C. Ward-Leonard control. 90 ft. boom and 58 ft. dipper stick. Built 1925 and used only two years. Very good condition.

Located Near Madisonville, Ky.
Part Cash Terms, if Necessary!

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"Anything so long as it contains Iron or Steel"

DEPENDABLE EQUIPMENT

1—**Guy Derrick** 115 ft. mast, 100 ft. boom, all new guy cables, lifting capacity 7½ tons
1—5-Drum **Thomas Elec. Hoist** with boom swinger
1—75-B, 1½-yd. **Gas Shovel**
1—75-B, 1¼-yd. **Gas Shovel**—Dragline 55' boom, 1-yd. bucket
1—104 **Northwest Crane**—50 ft. boom
1—50-B **Bucyrus Deisel Dragline**
1—50-B **Bucyrus Steam Shovel**
1—50-B **Bucyrus Steam Crane**
1—21-ton, 11x16, standard gauge, **Davenport Steam Locomotive**
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2—38-ton, 14x22, standard gauge **American Steam Locomotives**
4—50-ton, 17x24, **Davenport, 6-wheel Switchers**
2—2-S-C **Browning Steam Locomotive Cranes** 12-yd., 16-yd., 20-yd., 30-yd. standard gauge **Dump Cars**
General Construction Equipment

CLAPP, RILEY & HALL EQUIPMENT CO.
14 North Clinton St., Chicago, Illinois

CRANES – SHOVELS

1—8½-ton **Lorain-40 Truck-Crane**, 4-sp. Mack, outriggers, late 1935.
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1—**Michigan Truck-Crane** 25' Bm. late 1936.
1—15-ton **Northwest** #4 **Gas Crane** 45' Bm.
1—18-ton **P & H** #700 **Gas Crane** 70' Bm.
1—12-ton **Koehring** #301 **Gas Crane** 45' Bm.
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1—**Type O Thew Gas Shovel** ¾ yd.
1—**Lorain 75-B Gas Shovel** 1¼-yd., reblt.
1—**Lorain 77 Diesel Shovel** 1½-yd. 1935.
3—**Linn Tractors**, 8-yd. Pneumatic tires.

GREY STEEL PRODUCTS CO., INC.
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FOR SALE

#3 Northwest Shovel ¾ yd., Shop #2139, excellent condition.

Caterpillar 60, Serial #PA10053 Reblt.

Write for our complete list of used and rebuilt machines—**cranes and shovels, tractors, graders, pumps, locomotives, rollers, compressors,** etc.

TRACTOR & EQUIPMENT CO.
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LOCOMOTIVE CRANES

1—Type "J" 35 ton cap. McMYLER, 8 wheel MCB railroad type, steam driven, double drums, 50-70 ft. boom with extra 15 ft. jib.
1—20 ton cap. BROWNHOIST, 8 wheel, steam, 44'9½" boom.

ORANGE PEEL BUCKET

1—Hayward 1 cu. yd. cap. Heavy Duty. Factory rebuilt.

PHILIP T. KING, "The Crane Man"
50 Church St., New York

FOR SALE

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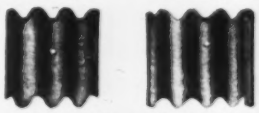

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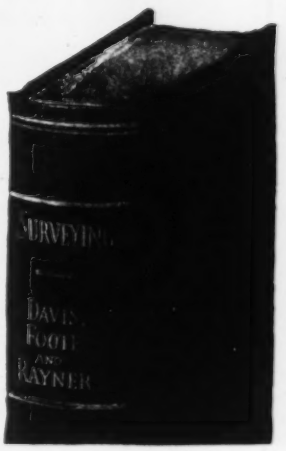

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